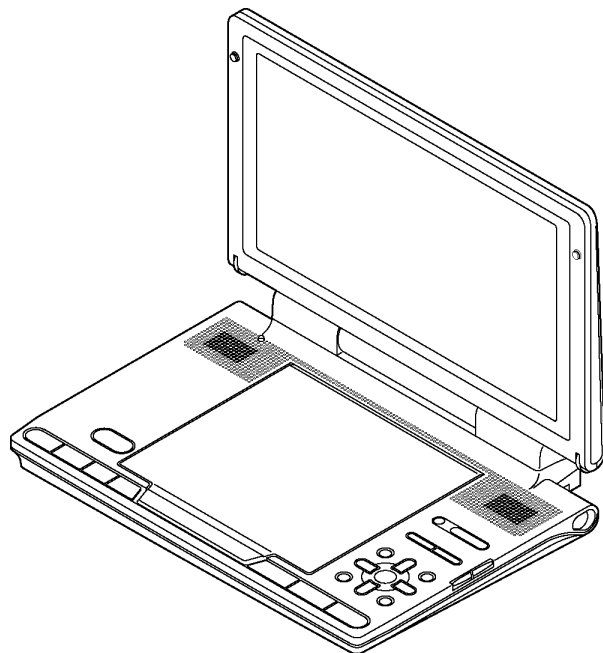


Service Manual

Portable DVD/CD PLAYER



DVD-LS91EE
DVD-LS91GN
DVD-LS91GCS

RAE1905Z-3C Mechanism Series

Colour

(S).....Silver Type

Specifications

Operating temperature

range:

+5 to +35°C (+41 to +95°F)

Operating humidity range:

5-85% RH (no condensation)

Region number:

Region No.3 (DVD-LS91GCS)

Region No.4 (DVD-LS91GN)

Region No.5 (DVD-LS91EE)

Panasonic®

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Discs played**[8cm (3") or 12cm (5")]:**

DVD (DVD-Video, DivX(EXCEPT GCS/*6,8))

DVD-RAM (DVD-VR, JPEG(*4,6,7), MP3(*2,6)) (MPEG4(EXCEPT GCS/*5,6), DivX(EXCEPT GCS/*6,8))

DVD-R (DVD-Video, DVD-VR, JPEG(*4,6,7), MP3(*2,6)) (MPEG4(EXCEPT GCS/*5,6), DivX(EXCEPT GCS/*6,8))

DVD-R DL (DVD-Video, DVD-VR)

DVD-RW (DVD-Video, DVD-VR, JPEG(*4,6,7), MP3(*2,6)) (MPEG4(EXCEPT GCS/*5,6), DivX(EXCEPT GCS/*6,8))

+R/RW (Video)

+R DL (Video)

CD, CD-R/RW [CD-DA, Video-CD, SVCD(*1), MP3(*2, 6), WMA(*3, 6), JPEG (*4,6,7), MPEG4(EXCEPT GCS/*5,6), Divx(EXCEPT GCS/*6,8) HighMAT Level 2 (Audio and Image)]

*1: Conforming to IEC62107

*2: MPEG-1 Layer3, MPEG-2 Layer3

*3: Windows Media Audio Ver9.0 L3. Not compatible with Multiple Bit Rate (MBR)

*4: Exif Ver 2.1 JPEG Baseline files
Picture resolution: between 160×120 and 6144×4096 pixels (sub sampling is 4:0:0, 4:2:2, 4:2:0 or 4:4:4)

*5: MPEG4 data recorded with the Panasonic SD multi cameras or DVD video recorders Conforming to SD VIDEO specifications (ASF standard)/MPEG4 (Simple Profile) video system/G.726 audio system

*6: The total combined maximum number of recognizable audio, picture and movie contents and groups: 4000 audio, picture and movie contents and 400 groups.

*7: Extremely long and slender pictures may not be displayed.

*8: Plays all versions of DivX® video (including DivX®6) with standard playback of DivX® media files.

Certified to the DivX Home Theater Profile.

GMC (Global Motion Compensation) is not supported.

Signal system:

PAL/PAL60 (NTSC) selectable

LCD screen:

9" α-Si, TFT wide-screen LCD

Composite-video output:

Output level: 1Vp-p (75Ω)

Output terminal: Mini-jack (Φ 3.5mm)

Number of terminals: 1system

Audio output:

Output level: 1.5Vrms (1kHz, 0dB, 10kΩ)

Output terminal: Stereo mini-jack (Φ 3.5mm)

Number of terminals: 1system

Audio performance:

- (1) Frequency response:
 - DVD (linear audio): 4Hz-22kHz (48kHz sampling)
4Hz-44kHz (96kHz sampling)
 - CD audio: 4Hz-20kHz
- (2) S/N ratio:
 - CD audio: 115dB
- (3) Dynamic range:
 - DVD (linear audio): 98dB
 - CD audio: 97dB
- (4) Total harmonic distortion:
 - CD audio: 0.008%

Digital audio output:

Optical digital output: Mini optical terminal

Number of terminals: 1system
(also used for audio output)

Headphone output:

Output: Stereo mini-jack (Φ 3.5mm)

Number of terminals: 2systems

Battery duration:

*CGR-H713: Option When brightness is set to "-5" while playing DVD: 3 hours (CGR-H701) /10 hours (CGR-H713)

*Room temperature When brightness is set to "0" while playing DVD: 2 hours (CGR-H701) /7 hours (CGR-H713)

*using headphone When brightness is set to "+5" while playing DVD: 1.5 hours (CGR-H701) /5 hours (CGR-H713)

When LCD panel is off while DVD playing: 5 hours (CGR-H701) /15 hours (CGR-H713)

Battery recharge time (at 20°C) 4 hours (CGR-H701) /10 hours (CGR-H713)

Pickup:

Wave length: 662nm/ 785nm (DVD/CD)

Laser power: CLASS 3B/ CLASS 3B (DVD/CD)

Power supply:

DC 12V (DC IN terminal) /
DC 7.2V (Exclusive battery terminal)

Power consumption

13W (Unit only: 10W)

(Using included AC adaptor):

Power consumption in Standby mode 0.3W

(Using included AC adaptor):

Power consumption in Recharge mode 13W

(Using included AC adaptor):**AC adaptor:**

Power source: AC 100-240V, 50/60Hz

Power consumption: 28W

DC output: 12V, 1.5A

Car DC adaptor:

DC output: 12V 2A (Vehicle with 12V battery only)

Battery pack CGR-H701**(lithium ion):****Voltage:** 7.2V**Capacity:** 2150mAh

Dimensions (excluding protrusions and battery): 235.4(W) x 179.2(D) x 46.0(H) mm
 $[9\frac{9}{32}" (W) \times 7\frac{1}{16}" (D) \times 1\frac{13}{16}" (H)]$
 24.3mm ($6\frac{1}{64}"$) at lowest point
 $[D=179.2\text{mm} (7\frac{1}{16}") \text{ including battery}]$
 $[H=46.6\text{mm} (1\frac{27}{32}") \text{ including battery}]$

Mass (including battery): approximately 1004g (35.42 oz)/
 862g (30.41oz) (Without battery)

solder:

This model uses lead free solder (PbF).

Note

Specifications are subject to change without notice.

Mass and dimensions are approximate.

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"DTS" and "DTS 2.0+ Digital Out" are trademarks of Digital Theater Systems, Inc.

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Windows Media, and the Windows logo are trademarks, or registered trademarks of Microsoft Corporation in the United States and/or other countries.

WMA is a compression format developed by Microsoft Corporation. It achieves the same sound quality as MP3 with a file size that is smaller than that of MP3.

MPEG Layer-3 audio decoding technology licensed from Fraunhofer IIS and Thomson multimedia.

This product is licensed under the MPEG-4 Visual patent portfolio license for the personal and non-commercial use of a consumer for (i) encoding video in compliance with the MPEG-4 Visual Standard ("MPEG-4 Video") and/or (ii) decoding MPEG-4 Video that was encoded by a consumer engaged in a personal and non-commercial activity and/or was obtained from a video provider licensed by MPEG LA to provide MPEG-4 Video.

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HighMAT™ and the HighMAT logo are either trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries.

Official DivX® Certified product.

Plays all versions of DivX® video (including DivX®6) with standard playback of DivX® media files.

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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1 Important Service Information

1.1. Notes

When you replace EEPROM or exchange MAIN PCB, you have to take "Manual for customer" to the customer with unit.
(also in the case of unit exchanges)

Please take and use "Manual for customer" from below.

1. Come with MAIN PCB or EEPROM (Service part).
2. Make a photocopy section 1.3. "Manual for customer" on this service manual.

"Manual for customer" has important information for "DivX Video-on-Demand Service" user.

Please don't forget take it to the customer with unit!

1.2. About DivX

1.2.1. DivX

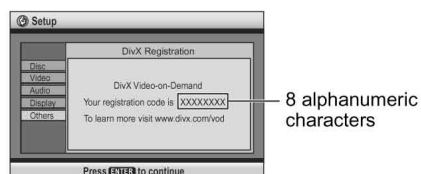
A video compression format developed by DivXNetworks, Inc. that compresses video files without any considerable loss of video quality.

1.2.2. About DivX Video-on-Demand Content

DivX Video-on-Demand (VOD) content is encrypted for copyright protection. In order to play DivX VOD content on this unit, you first need to register the unit.

Follow the on line instructions for purchasing DivX VOD content to enter the unit's registration code and register the unit. For more information about DivX VOD, visit www.divx.com/vod.

Display the unit's registration code



- We recommend that you make a note of this code for future reference.
- After playing DivX VOD content for the first time, another registration code is then displayed in "DivX Registration". Do not use this registration code to purchase DivX VOD content. If you use this code to purchase DivX VOD content, and then play the content on this unit, you will no longer be able to play any content that you purchased using the previous code.
- If you purchase DivX VOD content using a registration code different from this unit's code, you will not be able to play this content. ("Authorization Error" is displayed.)

Regarding DivX content that can only be played a set number of times

Some DivX VOD content can only be played a set number of times. When you play this content, the remaining number of plays is displayed. You cannot play this content when the number of remaining plays is zero. ("Rented Movie Expired" or "Rental Expired" is displayed.)

When playing this content

- The number of remaining plays is reduced by one if
 - you Press [⏮] or [SET UP].
 - you Press [■] (STOP). [Press [⏸] (PAUSE) to stop play].
 - you Press [⏮⏮⏮] (SKIP) or [⏮⏮] (SERCH) etc. and arrive at another content or the start of the content being played.
- Resume (STOP) and Marker (Play Menu) functions do not work.

1.3. Manual for Customer

Warning for Customers Who Use the DivX Video-on-Demand content.

1. The registration code has been changed for the repair of the product or the product exchange.
2. Obtain and register a new registration code, otherwise you will no longer be able to play DivX Video-on-Demand content.
3. Follow the procedure on the DivX Video-on-Demand web site to register at <http://vod.divx.com/>. (URL is valid as of April, 2005)

* If you do not use the DivX Video-on-Demand content, please ignore this warning.

2 SAFETY PRECAUTIONS

2.1. GENERAL GUIDELINES

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

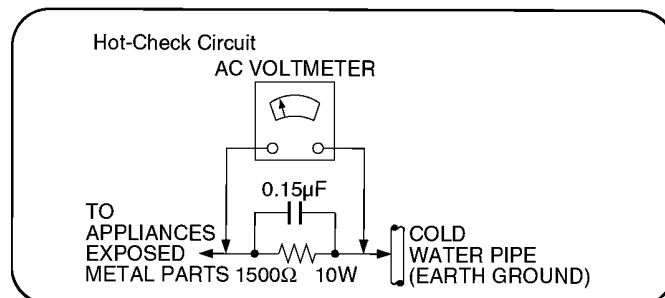
2.1.1. LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between $1M\Omega$ and $5.2M\Omega$.

When the exposed metal does not have a return path to the chassis, the reading must be ∞ .

2.1.2. LEAKAGE CURRENT HOT CHECK

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a $1.5k\Omega$, 10 watts resistor, in parallel with a $0.15\mu F$ capacitors, between each exposed metallic part on the set and a good earth ground such as a water pipe.



3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliamp. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

3 PREVENTION OF ELECTRO STATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electro static discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

Caution

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

4 PRECAUTION OF LASER DIODE

CAUTION:

This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pickup lens.

Wave length: 662nm/785nm

Maximum output radiation power from pickup: 100 μ

W/VDE

Laser radiation from the pickup lens is safety level, but be sure the followings:

1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pickup lens for a long time.

ACHTUNG:

Dieses Produkt enthält eine Laserdiode.

Im eingeschalteten Zustand wird unsichtbare

Leserstrahlung von der Lasereinheit abgestrahlt.

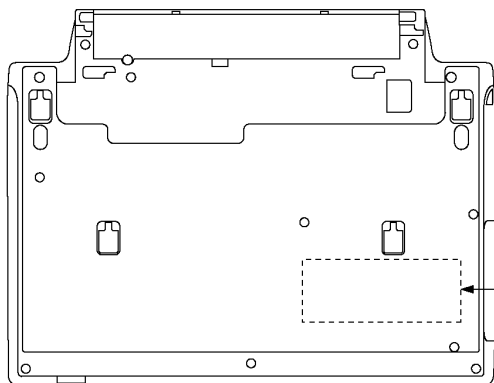
Wellenlänge: 658nm/790nm

Maximale Strahlungsleistung der Lasereinheit: 100 μ

W/VDE

Die Strahlung der Lasereinheit ungefährlich, wenn folgende Punkte beachtet werden:

1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werkseitig justierten Einstellregler der Lasereinheit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlines blicken.
4. Nicht über längere Zeit in die Fokussierlines blicken.



CAUTION- LASER RADIATION WHEN OPEN AND INTERLOCK DEFEATED. DO NOT STARE INTO BEAM. FDA 21 CFR / Class II

CAUTION- VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM. IEC60825-1/ Class 3b

ATTENTION- RAYONNEMENT LASER VISIBLE ET INVISIBLE DANGEREUX EN CAS D'OUVERTURE ET LORSQUE LA SÉCURITÉ EST NEUTRALISÉE. EXPOSITION DANGEREUSE AU FAISCEAU.

CAUTION!

THIS PRODUCT UTILIZES A LASER.

USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

5 HOW TO REPLACE THE LITHIUM BATTERY

This model is using a lithium battery for the remote control ass'y.

NOTE:

The lithium battery is a critical component. (Type No.: CR2025 Manufactured by Panasonic.)

It must never be subjected to excessive heat or discharge.

It must therefore only be fitted in equipment designed specifically for its use.

Replacement batteries must be of the same type and manufacture.

They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.

Do not attempt to re-charge the old battery or re-use it for any other purpose.

It should be disposed of in waste products destined for burial rather than incineration.

(For English)

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the equipment manufacturer.

Discard used batteries according to manufacturer's instructions.

(For French)

PRECAUTION

Le fait de remplacer incorrectement la pile peut présenter des risques d'explosion.

Remplacer la pile uniquement par une pile identique ou de type équivalent recommandée par le fabricant. Se débarrasser des piles usagées conformément aux instructions du fabricant.

(For German)

VORSICHT

Bei einer falsch eingesetzten Batterie besteht Explosionsgefahr. Nur mit einer vom gleichen Typ ersetzen.

Verbrauchte Batterien beim Fachhändler oder einer Sammelstelle für Sonderstoffe abliefern.

(For Swedish)

VARNING

Explosionsfara vid felaktigt batteribyte.

Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren.

Kassera använt batteri enligt fabrikantens instruktion.

(For Norwegian)

ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.

Udskiftning må kun ske med batteri af samme fabrikat og type.

Levér det brugte batteri tilbage til leverandøren.

(For Finnish)

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.

Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.

Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

6 Service caution based on legal restrictions

6.1. General description about Lead Free Solder (PbF)

The lead free solder has been used in the mounting process of all electrical components on the printed circuit boards used for this equipment in considering the globally environmental conservation.

The normal solder is the alloy of tin (Sn) and lead (Pb). On the other hand, the lead free solder is the alloy mainly consists of tin (Sn), silver (Ag) and Copper (Cu), and the melting point of the lead free solder is higher approx.30 degrees C (86 F) more than that of the normal solder.

Definition of PCB Lead Free Solder being used

The letter of "PbF" is printed either foil side or components side on the PCB using the lead free solder. (See right figure)

PbF

Service caution for repair work using Lead Free Solder (PbF)

- The lead free solder has to be used when repairing the equipment for which the lead free solder is used.(Definition: The letter of "PbF" is printed on the PCB using the lead free solder.)
- To put lead free solder, it should be well molten and mixed with the original lead free solder.
- Remove the remaining lead free solder on the PCB cleanly for soldering of the new IC.
- Since the melting point of the lead free solder is higher than that of the normal lead solder, it takes the longer time to melt the lead free solder.
- Use the soldering iron (more than 70W) equipped with the temperature control after setting the temperature at 350+-30 degrees C (662+-86 F).

Recommended Lead Free Solder (Service Parts Route.)

- The following 3 types of lead free solder are available through the service parts route.
- RFKZ03D01K----- (0.3mm 100g Reel)
- RFKZ06D01K----- (0.6mm 100g Reel)
- RFKZ10D01K----- (1.0mm 100g Reel)

Note

- * Ingredient: tin (Sn) 96.5%, silver (Ag) 3.0%, Copper (Cu) 0.5%, Cobalt (Co) / Germanium (Ge) 0.1 to 0.3%

7 HANDLING PRECAUTIONS FOR TRAVERSE DECK

The laser diode in the optical pickup may break down due to potential difference caused by static electricity of clothes or human body.

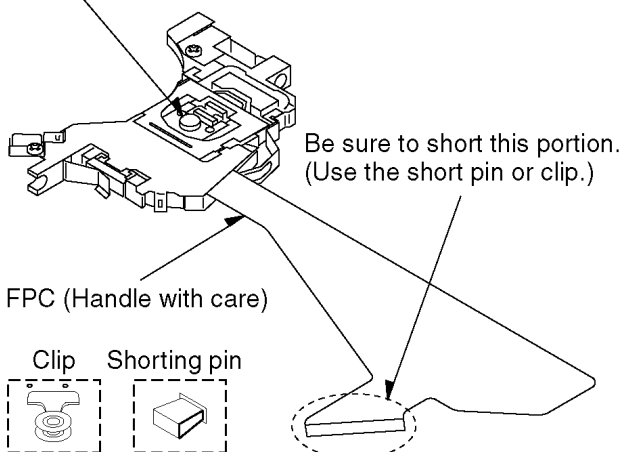
So be careful of electrostatic break down during repair of the optical pickup.

7.1. Handling of optical pickup

1. Do not subject the optical pickup to static electricity as it is extremely sensitive to electrical shock.
2. To prevent the breakdown of the laser diode, an antistatic shorting pin is inserted into the flexible board (FPC Board). When removing or connecting the short pin, finish the job in as short times as possible.
3. Be careful not to apply excessive stress to the flexible board (FPC Board).
4. Do not turn the variable resistor (Laser power adjustment).

It has already been adjusted.

Lens (Do not touch)

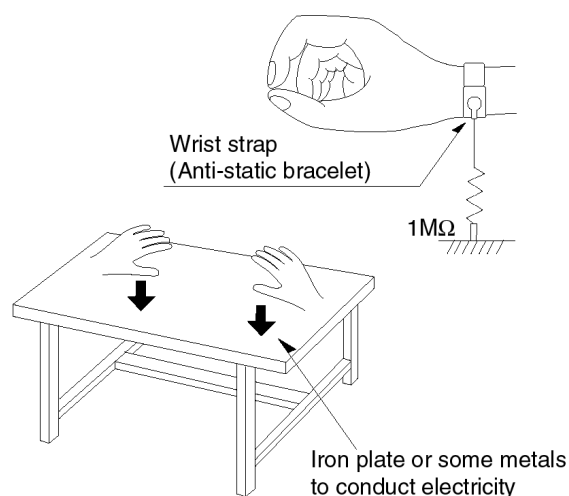


7.2. Grounding for electrostatic breakdown prevention

1. Human body grounding
Use the antistatic wrist strap to discharge the static electricity from your body.
2. Work table grounding
Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed and ground the sheet.

Caution

The static electricity of your clothes will not be grounded through the wrist strap. So take care not to let your clothes touch the optical pickup.



8 DISASSEMBLY, REASSEMBLY AND SERVICE POSITION



Before trying to disassembling, reassembling or replacing parts, make sure the DC receptacle is disconnected; otherwise there is a danger of causing an electrical shock accident or injury.



The laser does not come on when the inner cover is opened. If the objective lens of the optical pick-up shines in red when the inner cover is opened, turn off the power immediately and check.



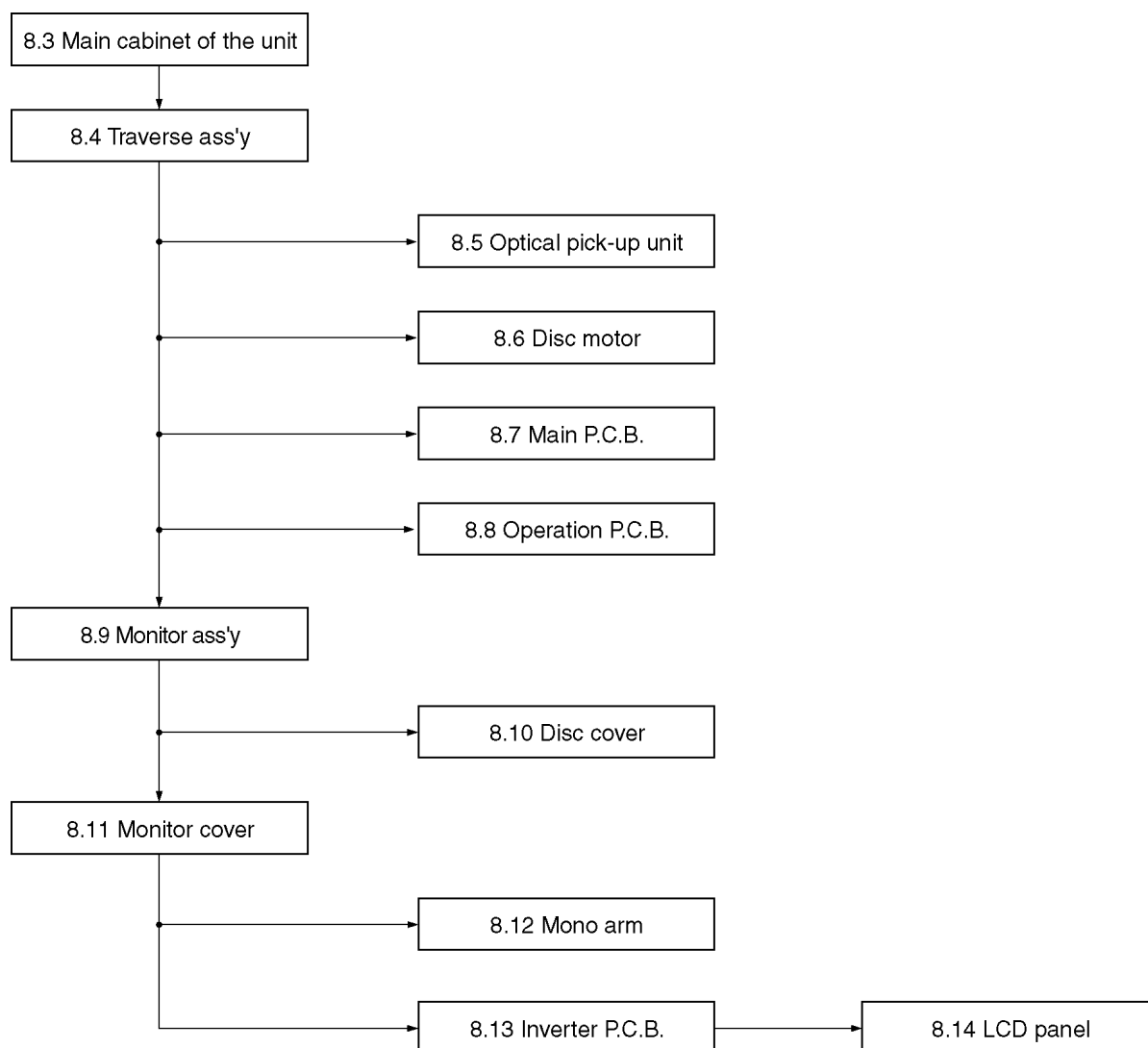
If you need to turn on the laser for any reason, such as playback inspection, never look directly at the laser light.



When disassembly of the unit is needed, remove the disk from the unit.

Use caution not to give damage to the LCD surface.

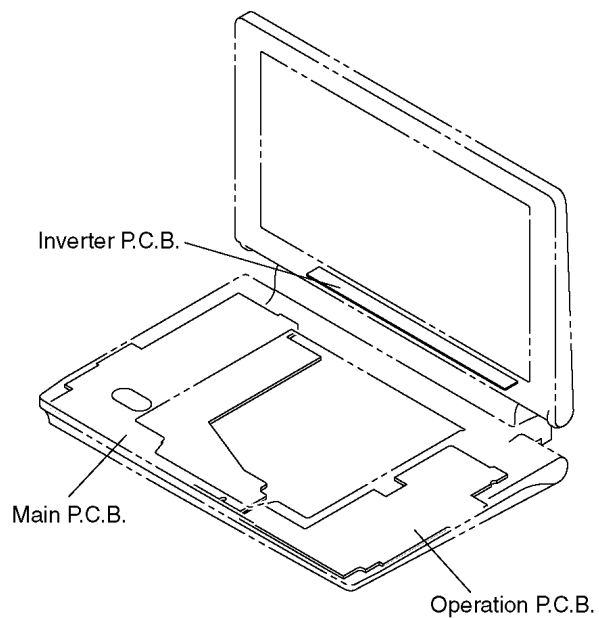
8.1. Disassembly



<Caution to be taken when disassembling and reassembling the unit>

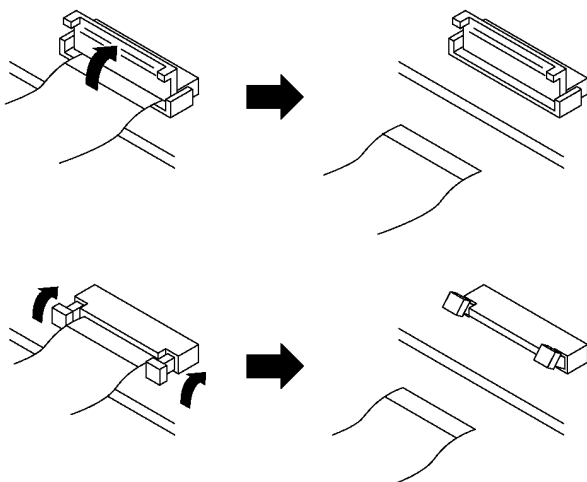
- Disconnect the flexible cable from the main P.C.B before disassembling the monitor assembly.
- Do not apply undue force on the flexible cable. There is a danger of breaking the cable.
- Do not touch the terminals of the flexible cable with your bare hands.
- Disassembly and reassembly should be performed in the specified order.
- Hold the LCD panel by its edges.
- Do not press the LCD panel strongly.
 - * If the LCD panel was pressed strongly by chance during disassembly or reassembly, leave it for about 10 seconds before energizing the panel.
- To clean the LCD panel, wipe with a soft cloth, such as gauze, saturated with isopropyl alcohol.
 - * Do not wipe the LCD panel with a dry gauze.
 - * Never use water for cleaning the LCD panel.
 - * Never use the following solvents:
 - (ketone: acetone and others)
 - (aromatic compounds: xylene, toluene)
 - (halogenides)
 - * If the water splashes on the LCD panel, wipe it away immediately.

8.2. P.C.B. location



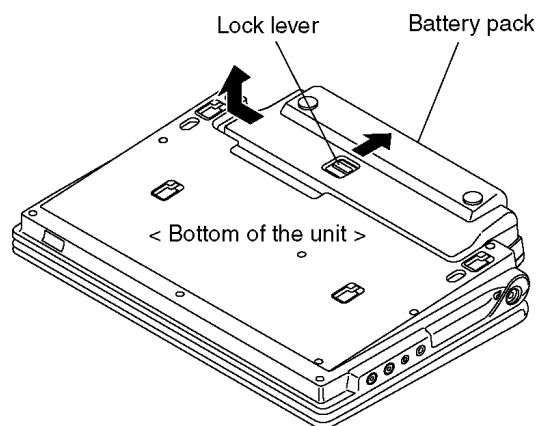
8.3. Main cabinet of the unit

Unlock the connectors and disconnect the flexible cables.

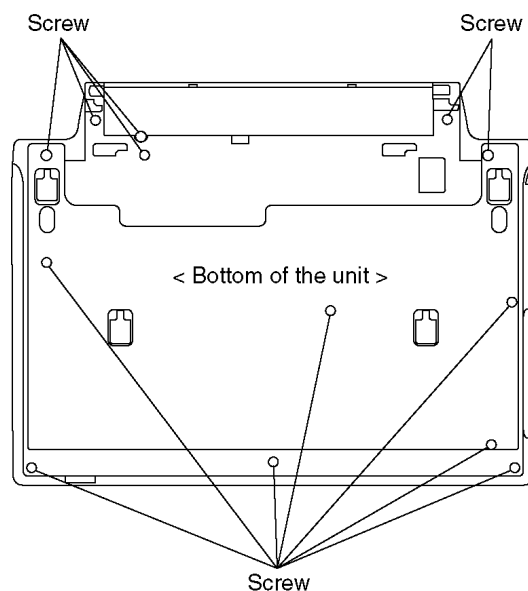


<Removing battery pack>

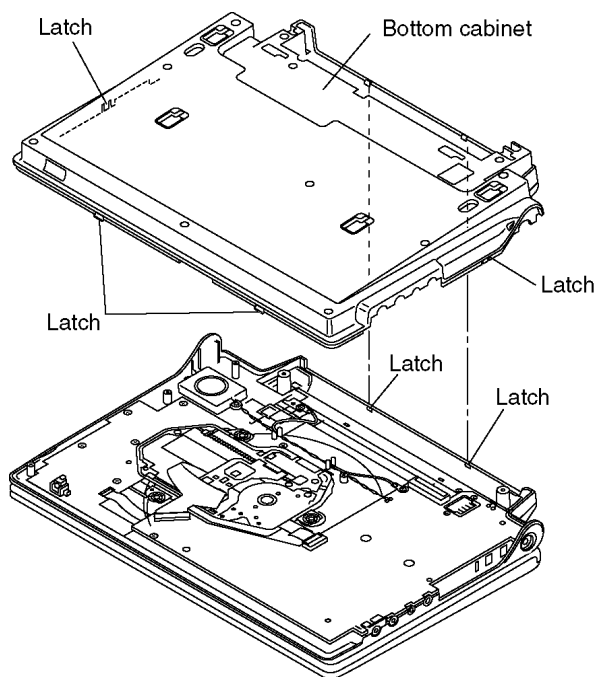
Release the lock lever and remove the battery pack in the direction of the arrow.



1. Remove the 13 screws from the bottom of the unit.



2. Release the latches and remove the bottom cabinet.



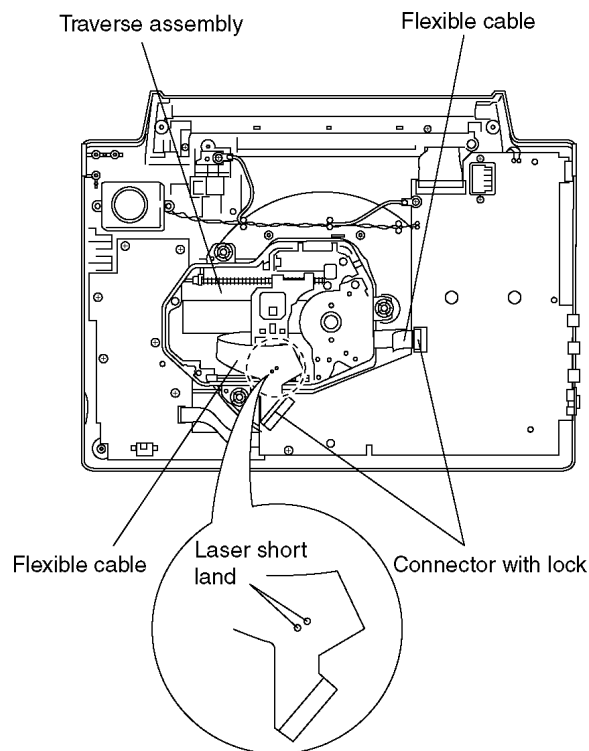
8.4. Traverse assembly



Take antistatic measures before servicing the traverse unit and its related devices.

8.4.1. Removing traverse assembly

1. Solder the 2 laser short lands on the flexible cable.
2. Unlock the connectors and remove the flexible cables.



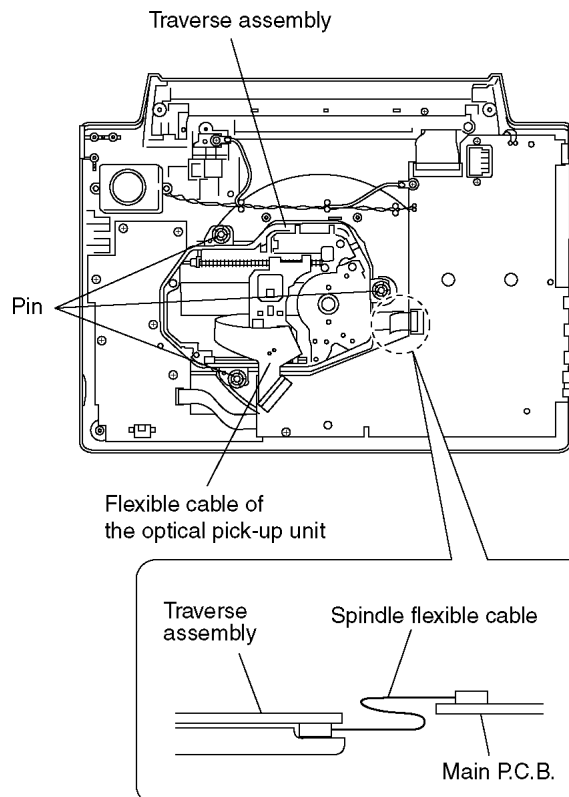
8.4.2. Reinstalling traverse assembly

1. Reinstall the traverse assembly to the specified pin of the unit.
2. Reinstall the flexible cable of the optical pickup unit and lock it securely.
3. Remove the solder of each laser short land of the flexible cable.

Caution:

Remove the solders completely: otherwise the laser diode won't emit light.

4. Reinstall the spindle flexible cable as shown figure.



8.5. Optical pick-up unit

8.5.1. Removing optical pick-up unit

Caution to be taken when replacing optical pick-up unit.

1. Take antistatic measures before servicing the optical pick-up unit.
2. Use a clean work bench which is free from dust or foreign matter.
3. Do not replace optical pick-ups other than necessary; otherwise they might not be properly adjusted.
4. When disassembling the traverse unit, use caution not to lose small parts such as screws and springs.

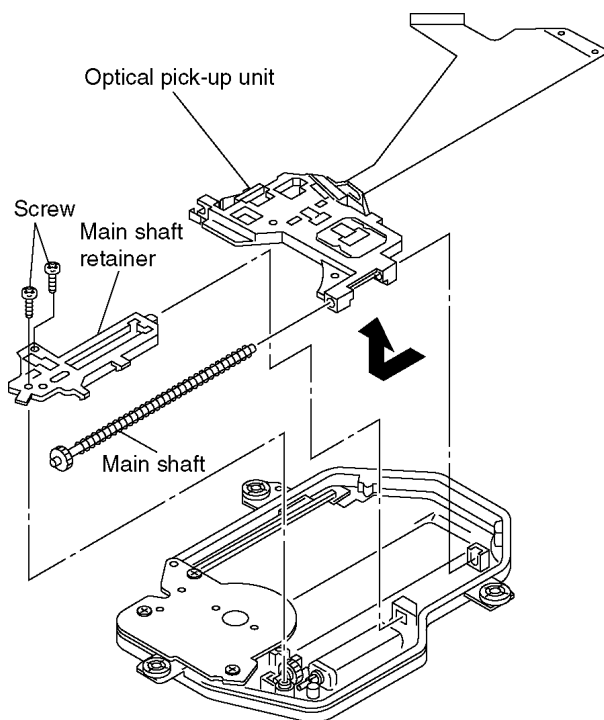


The traverse unit is a precision optical part. Do not touch the lens or give shock to the traverse.

Make sure that the traverse assembly removed before trying to remove the optical pick-up unit.

When removing the traverse assembly, solder the two laser short lands on the flexible cable of the optical pick-up unit.

1. Remove the two screws securing the main shaft retainer.
2. Remove the main shaft retainer.
3. Slide the main shaft in the direction indicated by the arrow to remove the optical pick-up unit.



8.5.2. Reinstalling optical pick-up unit

The optical pick-up unit is factory adjusted. Do not touch the adjustment screw.

1. Reassemble the disassembled parts in the reverse order of disassembly.
2. When reinstalling the traverse assembly on the main unit after installing the optical pick-up unit, make sure to remove the solder from each of the two laser short lands on the flexible cable.

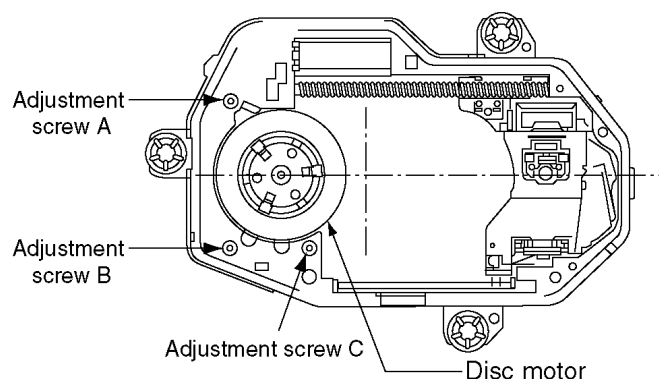
Caution:

- Remove the solders completely; otherwise the laser diode won't emit light.
- After replacing the optical pick-up unit, check the quality of images played back and make optical adjustment.

8.6. Disc motor

8.6.1. Removing disc motor

1. Remove the adjustment screws A, B, and C.
2. Remove the disc motor.

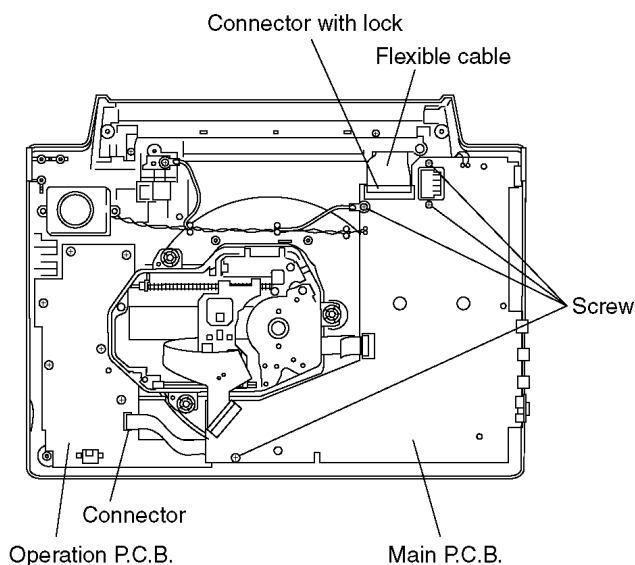


8.6.2. Caution to be taken when replacing the disc motor

1. The mounting screws of the disc motor also serve as adjustment screws. When reinstalling the disc motor, first turn the screws A, B, and C as far as they go by usual force to secure them (do not overtighten).
 2. Back off the adjustment screws A and C two complete turns and secure them.
 3. Back off the adjustment screw B one and a half turns and secure them.
 - This makes it nearly possible to play back disks and adjust the jitter.
- Thereafter, adjust the adjustment screws C and A as indicated.

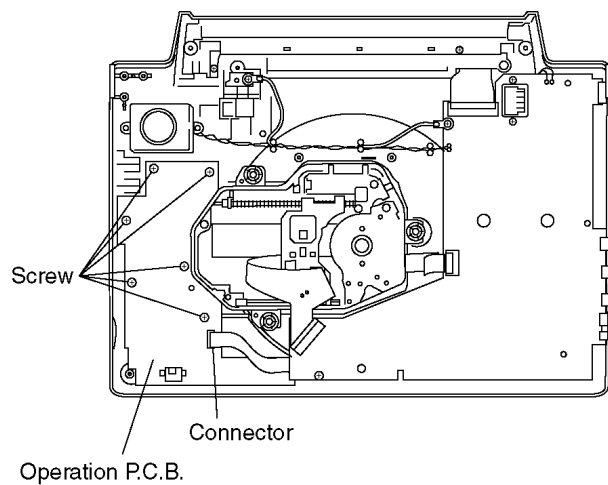
8.7. Main P.C.B.

1. Unlock the connector and remove the flexible cable.
2. Remove the connector.
3. Remove the 4 screws and remove the main P.C.B..



8.8. Operation P.C.B.

1. Remove the connector.
2. Remove the 6 screws and remove the operation P.C.B.

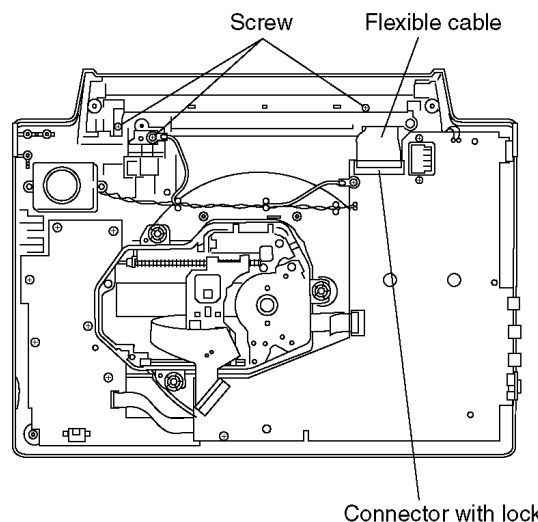


8.9. Monitor assembly

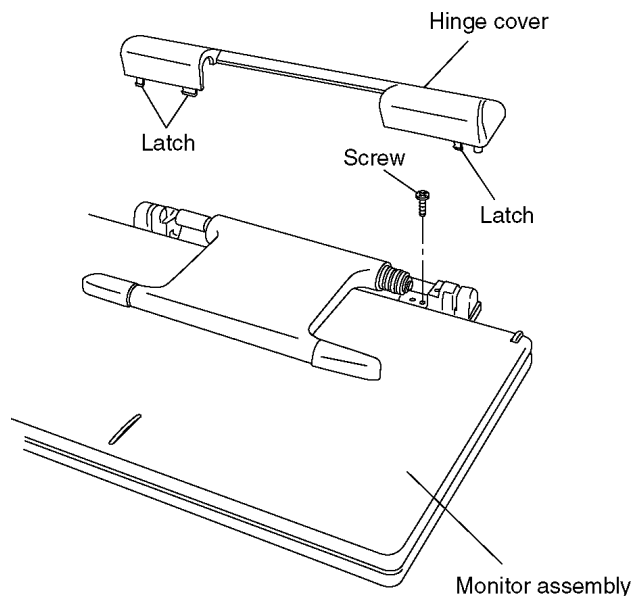


Take care not to get an electrical shock accident by touching the high-voltage part when checking for conduction after disassembly.
Do not give damage to the LCD surface.

1. Unlock the connector and remove the flexible cable.
2. Remove the 3 screws.

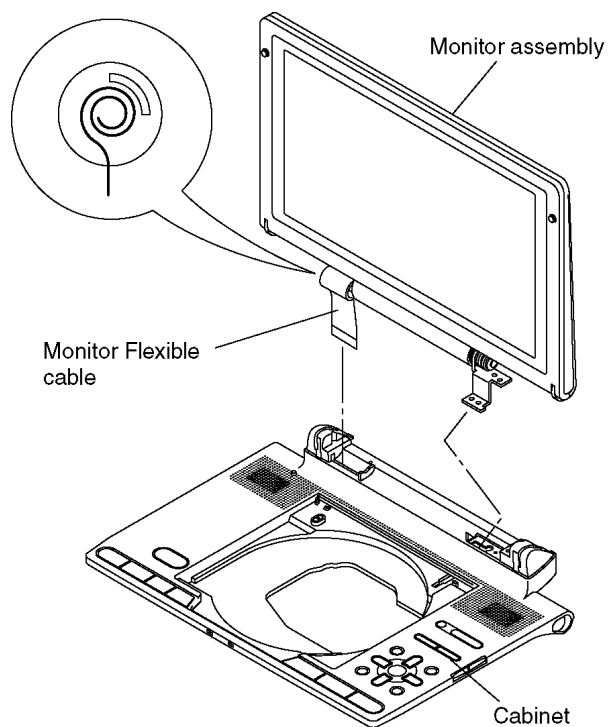


3. Release the latches and remove the hinge cover.
4. Remove the screw and remove the monitor assembly.



<Caution to be taken when installing monitor assembly>

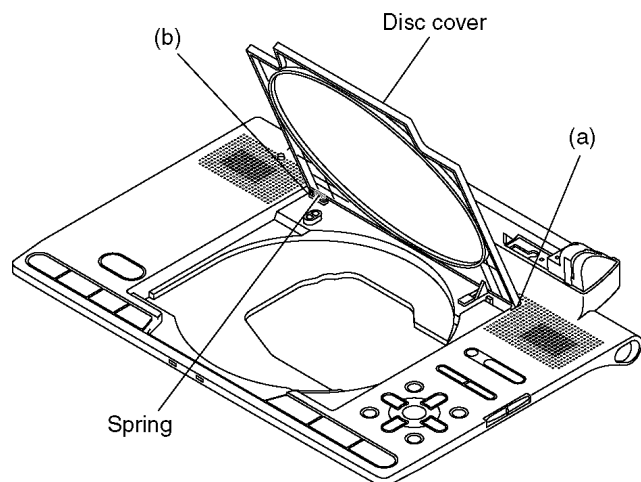
1. Roll the flexible cable as shown figure.
2. Install the monitor assembly on the cabinet.

**8.10. Disc cover**

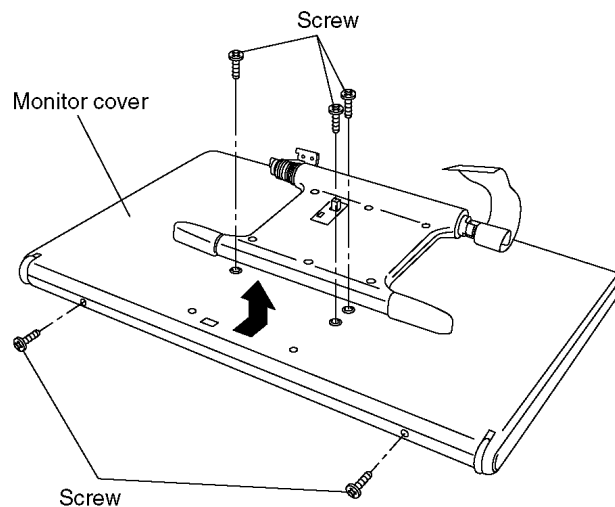
1. Remove the disc cover in order of (a) and (b).

Caution:

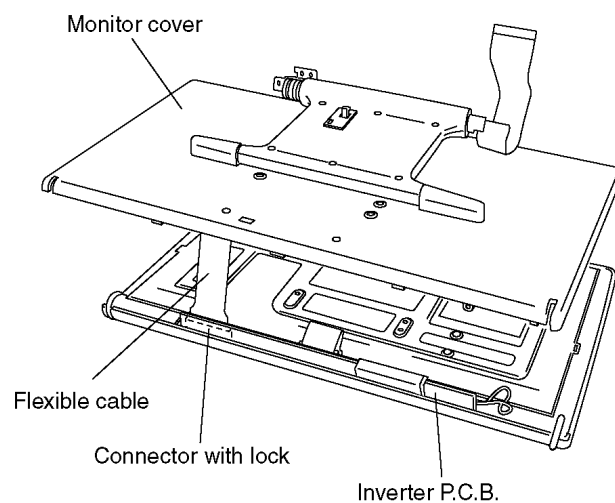
Please don't lose the spring

**8.11. Monitor cover**

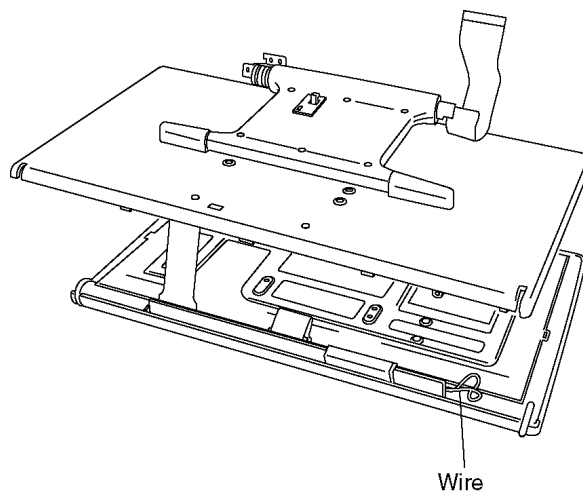
1. Remove the 5 screws
2. Remove the monitor cover into the direction of the arrow.



3. Unlock the connector and remove the flexible cable.

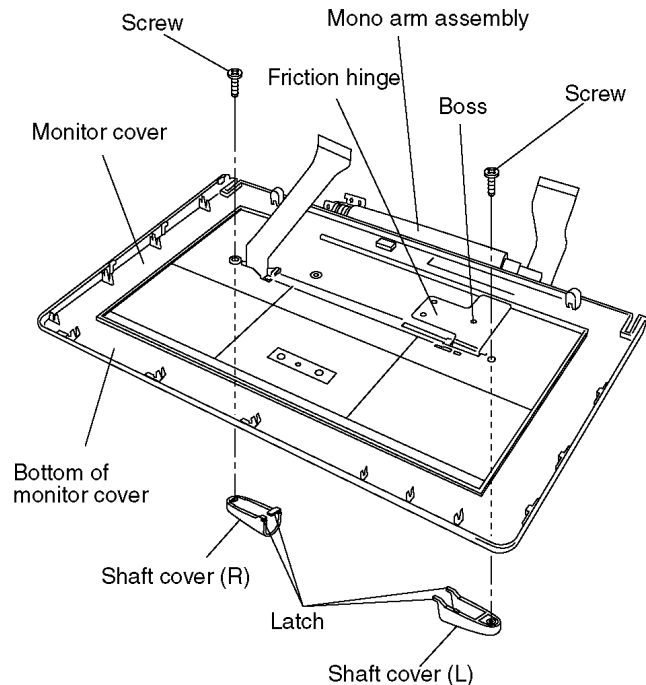
**<Caution to be taken when installing monitor cover>**

Please do not nip the wire.

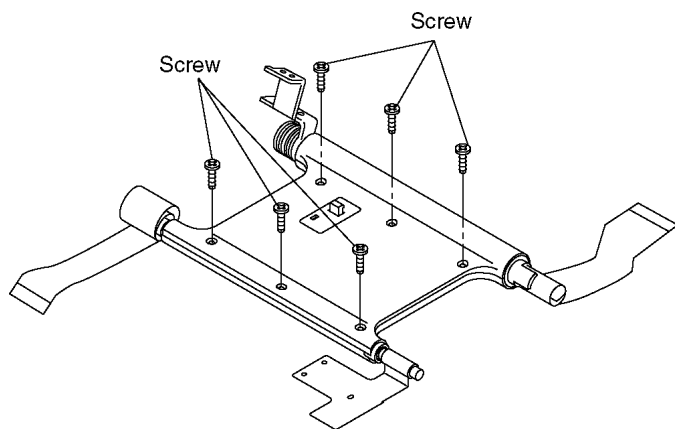


8.12. Mono arm

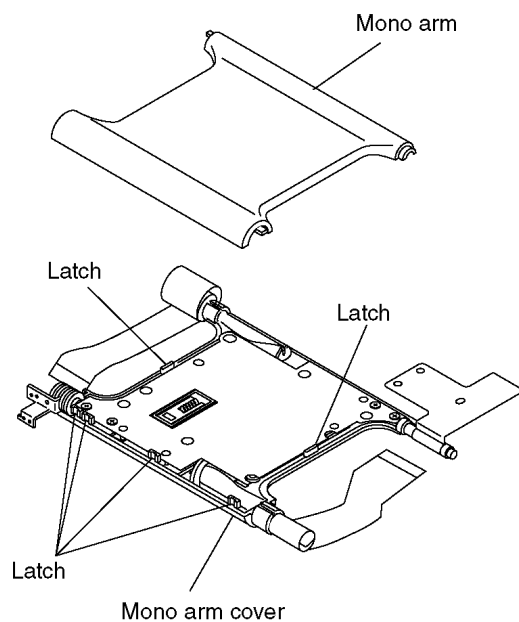
1. Remove the 2 screws.
2. Release the latches and remove the shaft covers.
3. Release the friction hinge from boss and remove the mono arm assembly.



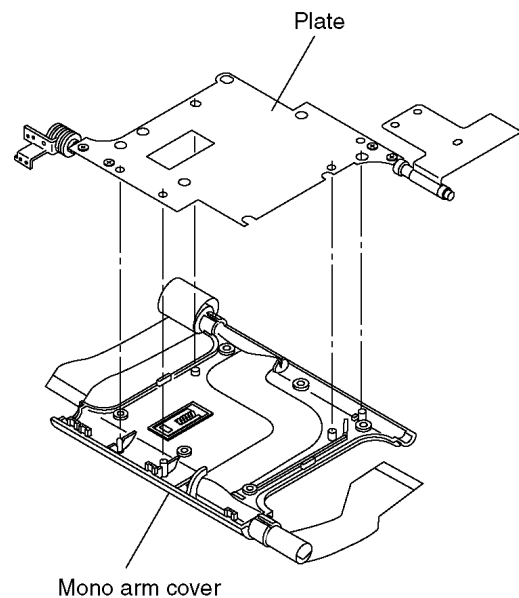
4. Remove the 6 screws.



5. Release the latches and remove the mono arm

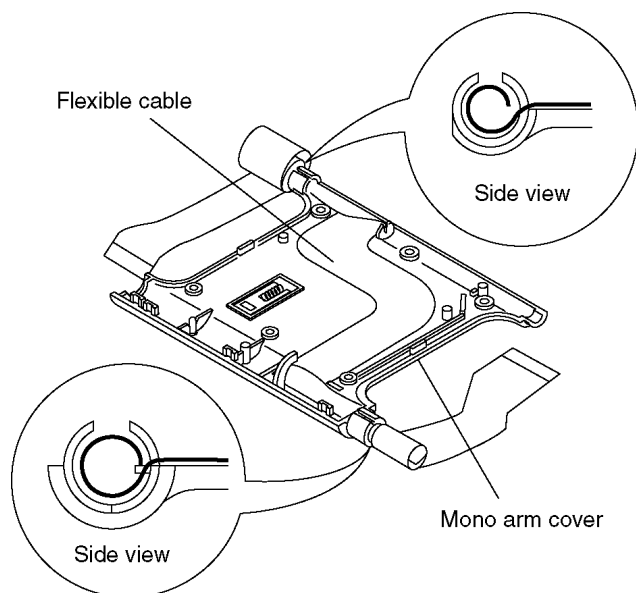


6. Remove the plate.

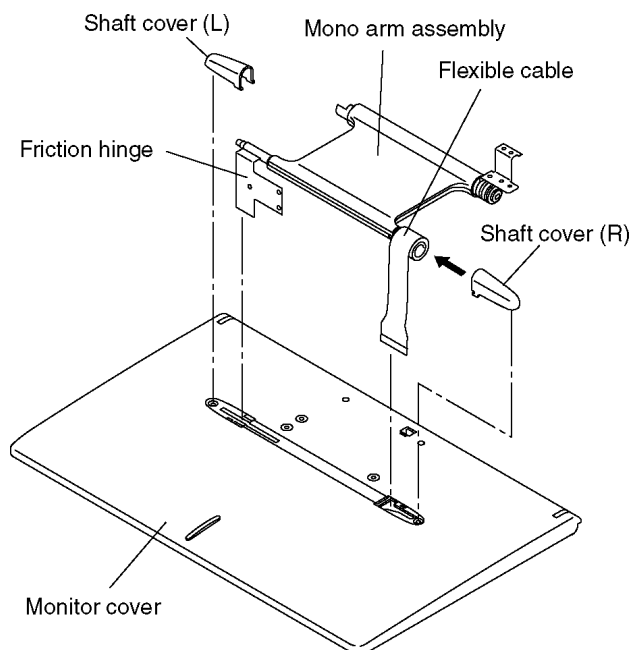


<Caution to be taken when installing mono arm>

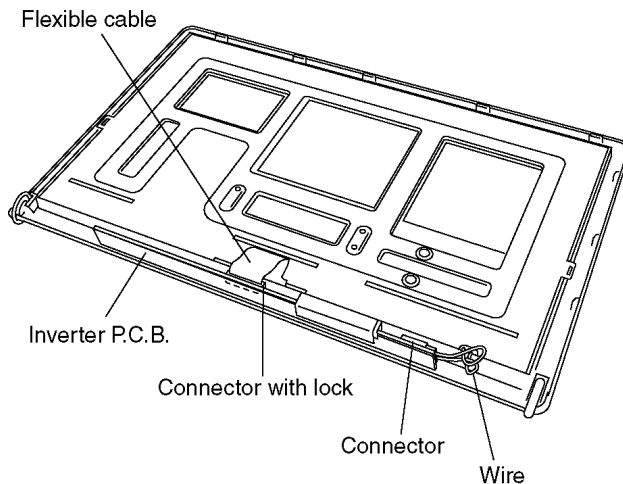
1. Roll the flexible cables as shown figure and install it to mono arm cover.



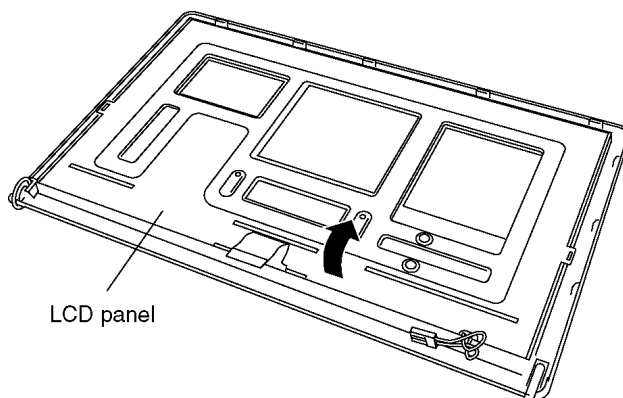
2. Install mono arm.
3. Roll 3 turns of the flexible cable and Install the shaft cover (R) to flexible cable.
4. Pass the flexible cable and the friction hinge into the holes in the monitor cover.
5. Install the shaft covers to monitor cover.

**8.13. Inverter P.C.B.**

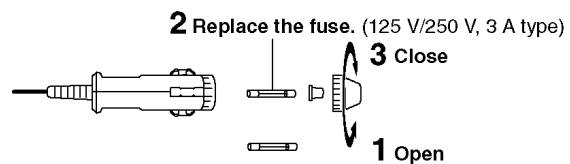
1. Unlock the connector and remove the flexible cable.
2. Remove the connector and remove the inverter P.C.B.

**8.14. LCD panel**

1. Remove the LCD panel into the direction of the arrow.

**8.15. Replacing the fuse in the car dc adaptor**

- Replace only with the specified 125V/250V, 3A fuse. Use of any other type can cause fire.



8.16. Service position



If you need to turn on the laser for any reason, such as for playback inspection, never look directly at the laser light.

8.16.1. Board checks

1. Connect the main P.C.B and the traverse assembly with an extension cable.
2. Install the traverse assembly to the tilt adjustment jig using three screws and three washers.

Caution:

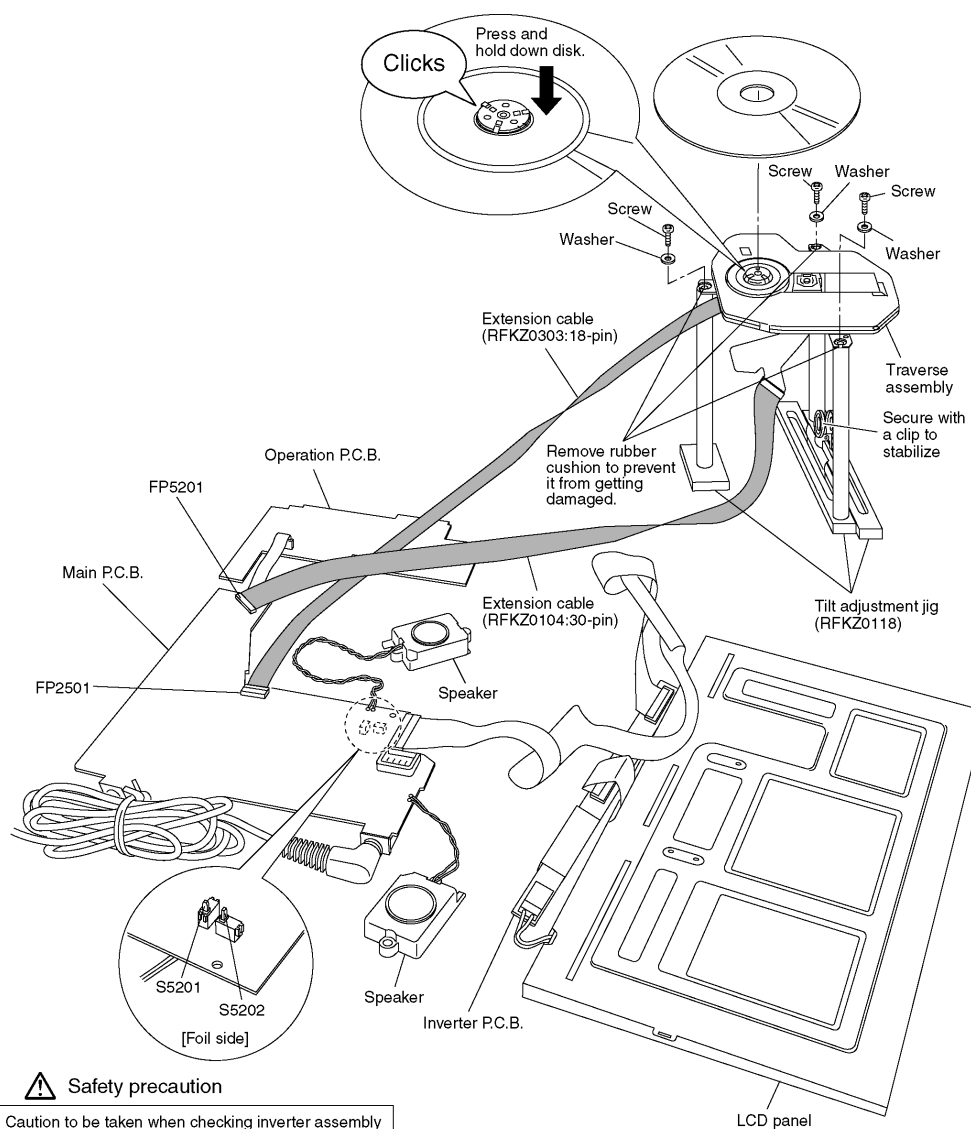
- Remove the rubber cushion from the traverse assembly to prevent it from getting damaged.

3. Install a disk on the traverse assembly.

Caution:

- Make sure the disk is securely installed on the disk motor.

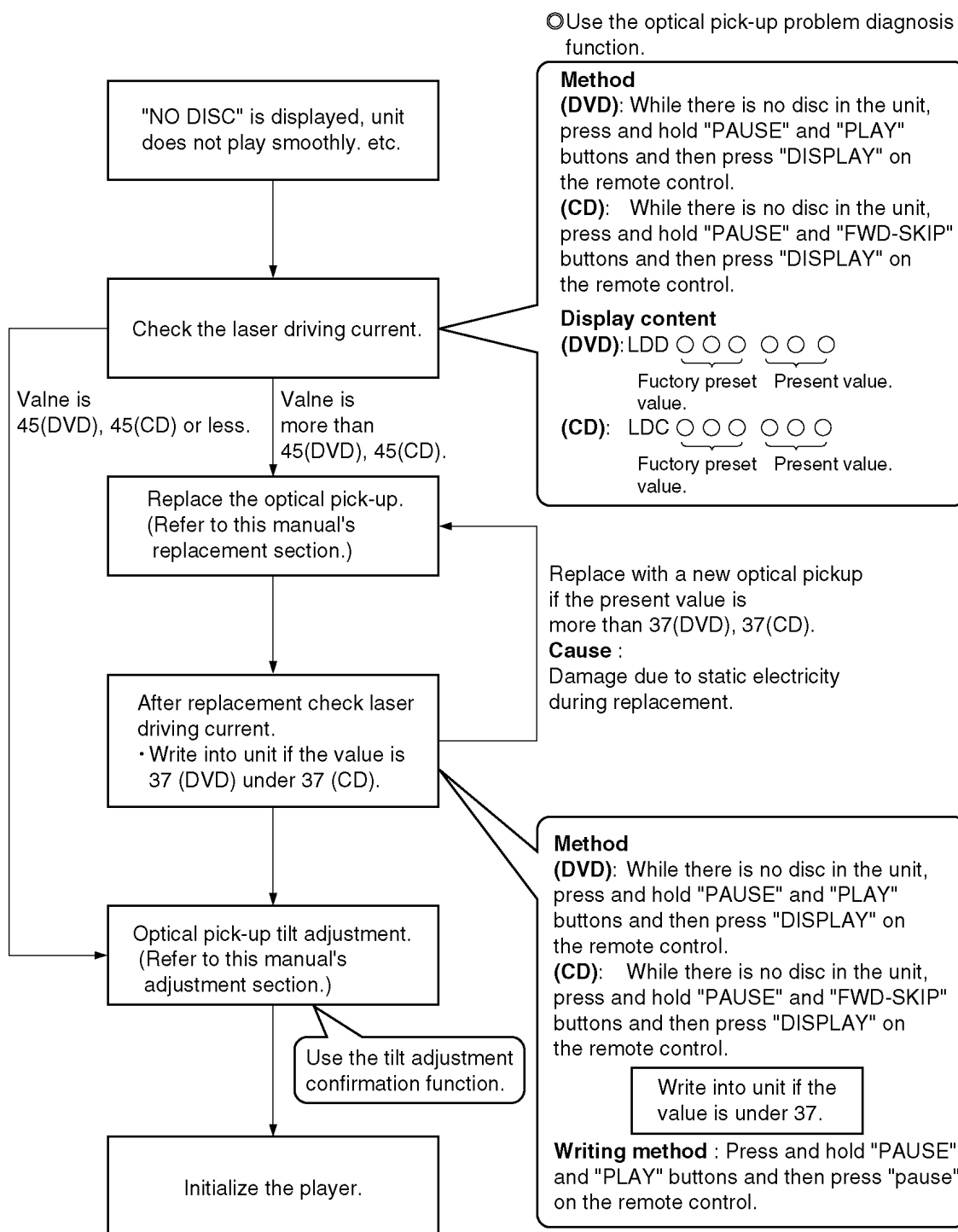
4. Remove the main P.C.B., operation P.C.B., inverter P.C.B., and LCD panel as shown below.
5. The disk cannot be played back with the disk cover removed. Press and hold down the S5201 and S5202. (Secure with cellulose tape.)



9 SELF-DIAGNOSIS FUNCTION AND SERVICE MODE

9.1. Optical Pickup Breakdown Diagnosis

As a new feature, this unit has an "optical pick-up problem diagnosis function" and "a tilt adjustment confirmation function" built in. Use the following procedure to efficiently determine the problem and adjust tilt. If "NO DISC" is displayed, before exchanging the optical pick-up, carry out problem diagnosis first. If the present laser driving current is over 55, the optical pick-up may need to be exchanged.



Note:

Carry out diagnosis within 3 minutes of turning the unit on. (The player's current can increase as it warms up, so turn the unit off and allow it to cool down before diagnosis.)

Cautions to be taken when replacing the optical pickup

The optical pickup may break down due to the static electricity of human body. Take proper protection measures against static electricity before repairing the parts around the optical pickup. (See the page describing the PREVENTION OF STATIC ELECTRICITY DISCHARGE.)

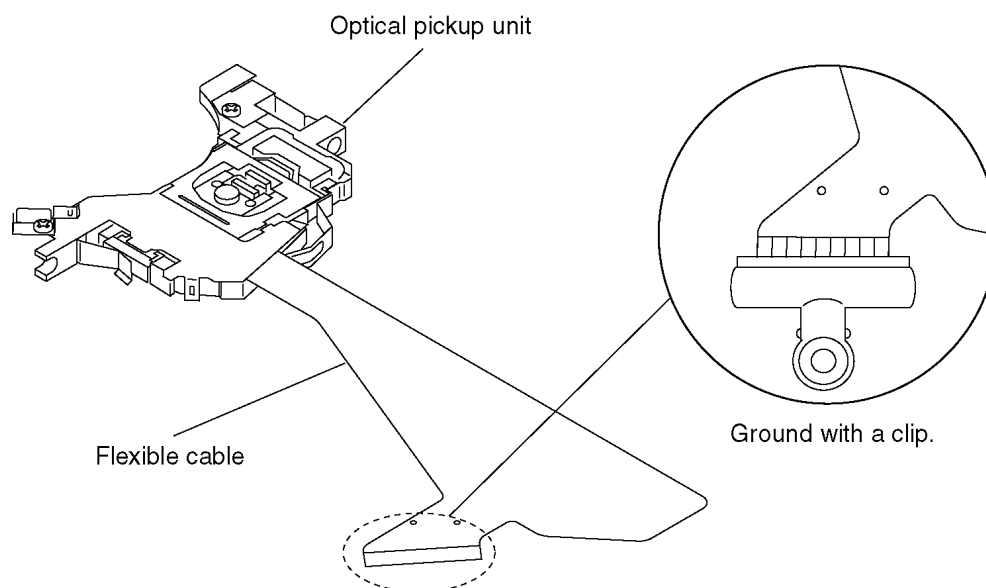
1. Do not touch the areas around the laser diode and actuator.
2. Do not judge the laser diode with a tester. (The tester will be damaged easily.)
3. It is recommended to use a destaticized soldering iron

for short-circuiting or removing the laser diode.
(Recommended soldering iron) HAKKO ESD Product

4. Solder the land of the flexible cable in the optical pickup.

Note:

- When using a soldering iron which is not destaticized, short-circuit the terminal face of the flexible cable with a clip. After that, short-circuit the land.
- After the repairing work is completed, remove the solder according to the correct procedure shown in this Technical Guide.



9.2. UHF displays

Use the internal service mode for evaluation of malfunctions.

Display Method	Display	Diagnosis
Items displayed when in use	CHECK THE DISC	Focus error
	H01	Inner cover trouble
	H02	Spindle servo error
	H03	Traverse error
	H04	Tracking servo error
Press the "0" button on the remote control while holding down the PAUSE and PLAY buttons on the player. The last error code generated is saved in the EEPROM	H05	Seek error
	F0**	Disc format error
	F1**	Disc code error
	F2**	Decoder LSI error
	F5**	DSC
	F6**	ECC error
	F7**	Microcomputer error
	F8**	Microcomputer error

9.3. Service Mode Table 1

The service modes can be activated by pressing various button combination on the player and remote control unit.

Player buttons	Remote control unit buttons	Application	Note
PAUSE + PLAY	0	Displaying the UHF display F_ _ _	Refer to section 9.4. Self-Diagnosis Function (UHF Display).
	5	Jitter check, tilt adjustment *Display shows xx_yyyzz "xx" and "zz" shown to the right have nothing to do with the jitter value. "xx" is the error counter, while "zz" is the focus drive value. Refer to section 11.4. for Optical Pickup Tilt Adjustment Procedure.	Refer to section 11.4. Optical Pickup Tilt Adjustment
	6	Checking the region numbers and broadcast system	
	7	Checking the program version	Check the IC3001 FLASH ROM program.
	9	Lighting Confirmation Function of Display Tube	
	DISPLAY	Checking the laser drive current	Refer to section 8.5. Optical Pickup Replacement Procedure.
	PAUSE	Writing the laser drive current value after replacing the optical pickup (do not use for anything other than optical pickup replacement)	
PAUSE BWD-SKIP PLAY	—	The user setting is returned to the state of the factory shipment.	Refer to section 9.6. Initializing the DVD player.

9.4. DVD Self Diagnostic Function-Error Code

<Displayed during normal operations>

Error code	Contents	Case of Occurrence	Task	Remarks
U11	Focus Servo error	Dirty disc	Servo	U11 may also result when DVD-R is not finalized.
	CHECK DISK	Incompatible media	Servo	
U15	DVD-R not finalized	DVD-R and RW not finalized. Output may result when a pickup error occurs.	Servo	
U70-1	HDMI/DVI EDID reading error	Occurs when connection is HDMI/DVI and EDID data for the picture receiver cannot be read.	AV	
U70-2	HDMI/DVI non-HDCP compliance	Occurs when connection is HDMI/DVI and the picture receiver is not compliant with HDCP. HDCP: Copyright protection technology Digital video signal encryption method	AV	
U70-3	HDMI/DVI authentication error	Occurs when connection is HDMI/DVI and authentication of the picture receiver (using HDCP) failed.	AV	
H01	Tray loading error	Tray movement error. Unable to open. Unable to close.	Panel	When OPEN: FOPEN->CLOSE->OPEN->H01 When CLOSE: FCLOSE->OPEN->CLOSE->H01
H02	Spindle error	Spindle motor errorFG pulse abnormal. Cable cut, etc.	Servo	
H03	Traverse motor error	Traverse abnormal	Servo	
H05	Seek time out error	Unable to access. TOC reading error, etc. Pickup error, disc error, etc. Output results when a dirty disc is used.	Servo	Changed to U11 from D80 series onward.
H07	Driver IC thermal shutdown	Spindle motor error (short circuit in between brushes) (Applicable to brush-type spindle motors only)	Servo	

<Recorded but not displayed during normal>

Error code	Contents	Case of Occurrence	Task	Remarks
F010	Set value exceeded parental value in the designated country	DVD-Video Disc management data error (Error in management data related to viewing restrictions)	Disc	
F020	TT_SRPT does not exist RLBN is 0	DVD-Video/Audio Disc management data error (Error in title-related management data)	Disc	
F021	TT_SRP number is 0	DVD-Video/Audio Disc management data error (Error in title-related management data)	Disc	
F022	Set value exceeds TT_SRP number	DVD-Video/Audio Disc management data error (Error in title-related management data)	Disc	May occur when a wrong number is set (when the set number exceeds the maximum number of titles in the disc).
F023	SRP in conformity with VTSN or VTS_TTN does not exist	DVD-Video/Audio Disc management data error (Error in title-related management data)	Disc	
F024	Set value exceeds TT_SRP.PTT_Ns	DVD-Video/Audio Disc management data error (Error in chapter-related management data)	Disc	May occur when a wrong chapter number is set (when the set number exceeds the maximum number of chapters in the disc).
F030	TTU_SRP number is 0	DVD-Video/Audio Disc management data error (Error in title-related management data)	Disc	
F031	Set value exceeds TTU_SRP number	DVD-Video/Audio Disc management data error (Error in title-related management data)	Disc	May occur when a wrong title number is set (when the set number exceeds the maximum number of titles in the disc).
F041	PGCI_SRP number is 0	DVD-Video/Audio Disc management data error (Error in title-related or menu-related management data)	Disc	
F042	Set value exceeds PGCI_SRP number	DVD-Video/Audio Disc management data error (Error in title-related management data)	Disc	May occur when a wrong title number is set (when the set number exceeds the maximum number of titles in the disc).
F051	Set value exceeds TMAP_SRP number	DVD-Video/Audio Disc management data error (Error in management data for time-search)	Disc	
F052	Set TMAP_SA is 0	DVD-Video/Audio Disc management data error (Error in management data for time-search)	Disc	
F053	MAP_EN number is 0	DVD-Video/Audio Disc management data error (Error in management data for time-search)	Disc	
F060	C_POSIT exists, but PGMAP does not exist in PGC	DVD-Video/Audio Disc management data error (Error in title-related management data)	Disc	
F061	C_POSIT exists, but PG number in PGC is 0	DVD-Video/Audio Disc management data error (Number of chapter is 0 or management data is arranged in violation of specifications.)	Disc	
F062	Set value exceeds PG number in PGC	DVD-Video/Audio When one of the following conditions applies <ul style="list-style-type: none"> Disc management data error (Error in title-related or chapter-related management data) Management data is arranged in violation of specifications. 	Disc	May occur when a wrong chapter number is set (when the set number exceeds the maximum number of chapters in the title).
F063	C_POSIT exists, but C_PBIT does not exist in PGC	DVD-Video/Audio Disc management data error (Error in title-related or chapter-related management data)	Disc	
F064	C_POSIT exists, but Cell number in PGC is 0	DVD-Video/Audio Disc management data error (Chapter number is 0)	Disc	
F065	Set Cell number is 0	DVD-Video/Audio Disc management data error (Chapter number is 0)	Disc	

Error code	Contents	Case of Occurrence	Task	Remarks
F066	Set value exceeds cell number in PGC	DVD-Video/Audio Disc management data error (Chapter number is 0)	Disc	May occur when a wrong chapter number is set (when the set number exceeds the maximum number of chapters in the title).
F067	Must be a block cell	DVD-Video/Audio Disc management data error (Data error related to angles in the title)	Disc	
F070	Not NV_PCK data	DVD-Video/Audio Disc management data error (Management data or its arrangement is in violation of specifications)	Disc	
F080	Searched Cell number is not found	DVD-Video/Audio Disc management data error (Chapter number is 0)	Disc	May occur when a wrong chapter number is set (when the set number exceeds the maximum number of chapters in the title).
0xF0C0	Management data error, no playback file	<No contents (management data and playback files do not exist)> Set under the following conditions <ul style="list-style-type: none"> When a DVD-Video/VR/Audio management data contains an error When playback contents do not exist (Search continues to the end and no contents error results when SD and PCF file management data error exists)	Disc	Defined in DEFMAIN.H
0xF0C1	Disallowed region code	DVD-Video Disallowed through region code DVD-Video disc region code different from the player region code was set at the time of playback.	Disc	Defined in DEFMAIN.H May be displayed when EEPROM was falsified.
0xF0C2	PAL playback disallowed	DVD-Video/VR Set when a DVD-Video/VR disc containing a PAL program is set on a model that plays no PAL contents.	Disc	Defined in DEFMAIN.H
0xF0C3	All titles not playable under the parental lock	DVD-VideoSet when viewing restrictions disallows playback.	Disc	Defined in DEFMAIN.H
0xD0C5	VCD/CDÁFCD-ROM other than CD-DA disallowed	Playback disallowed for a CD not compliant with the player May be set when disc is not CD-DA, and it contains no file such as an MP3/WMA file compliant with the player.	Disc	Defined in DEFMAIN.H This error is rarely recorded even when a disc described left is set. The error exists for a reason unknown.
F0C6	SD card: FAT error	SD card format not readable The card might have been formatted on a Windows PC.	Disc	Mounted on D86-generation and newer models
F0C7	SD card: physical error	<Physical card error> The SD card may be destroyed physically. Possible insertion of a card other than SD card/MMC Only mini SD card adapter may be inserted	Drive	
F0C8	SD card : master boot record error	SD card is not destroyed physically, but reading not normal. SD card formatting may correct the error.	Drive	Mounted on D86-generation and newer models
F0E5	Firm file reading error at the time of downloading	DFD disc reading error (Firm rewrite data was not read correctly)	Disc	
F103	Illegal Highlight Position	Occurs mainly in cases where the disc violates specifications. Occurs when a location set for highlighting does not exist on a DVD-V disc.	AV	ILL_HLPOS
F4FF	Compulsory initialization failure (time-out)	Compulsory initialization failed despite a wrong EEPROM value	UI	Defined in DEFMAIN.H
F500	DSC error	Servo LSI error	Servo	
F501	DSC not ready Error		Servo	
F502	DSC time-out error	Servo LSI error, servo adjustment error	Servo	
F505	DSC attention error	Servo error	Servo	
F506	Invalid media	Unsupported media, data is unreadable	Servo	
0x9010	DSC command escape	OPEN request	Servo	Not an error
0x9020	Unrecorded field	Entered an unrecorded field on a multi-session CD-R, RW	Servo	Not an error
F0BB	No DVD-R playback	Copyright protection (CSS) exists for DVD-R. DVD-R does not play back because it is an illegal copy.	Drive	Registration
F0BC	No DVD-RAM playback	Copyright protection (CSS) exists for DVD-RAM. DVD-RAM does not play back because it is an illegal copy.	Drive	Registration

Error code	Contents	Case of Occurrence	Task	Remarks
F0BF	No playback because physical layer cannot be detected	Media identification impossible (examples) 1. Detection impossible due to inferior disc non-compliant with specifications 2. CDV or other unsupported media 3. Disc was inserted upside down.	Drive	Registration
F600	Management data is inaccessible because of a demodulation error.	Data necessary for NaviPack and other navigation transfers became impossible to acquire due to a damaged disc and other causes, and playback transfer became impossible.	ECC	Registration
F601	Unstable sector ID was requested	Attempt was made to access a non-existent disc location due to authoring record and other errors.	ECC	Registration
F603	KEYDET acquisition impossible due to demodulation error.	Data for decrypting copyright protection (CSS) became impossible to acquire due to a damaged disc or other causes, playback is not possible.	ECC	Registration
F700	MBX Overflow	Incorrect processing error within microcomputer Occurs mainly in cases where microcomputer software has a problem.	AV	MSG_QOVR
F701	Message command not complete error	Incorrect processing error within microcomputer Occurs mainly in cases where microcomputer software has a problem.	AV	MSG_NOTCOMP
F702	Message command changed	Incorrect processing error within microcomputer Occurs mainly in cases where microcomputer software has a problem.	AV	MSG_CMDCHG
F740	When HDMI device key writing failed	I2C error occurred while writing to Device Key in Tx.	AV	
F750	When the HDMI Device Key was wrong	Occurs when the wrong Device Key is written into Tx.	AV	
F890	Tried to send message during transmission to AV task	Player system error	Disc	Player control software operation is abnormal
F891	Message transmission to AV task failed (Mailbox overflow, etc.)	Player system error	Disc	Player control software operation is abnormal
F893	Flash data falsification error	When an error is found in Flash ROM data	Sys	
F894	EEPROM error	When accessing EEPROM failed	Sys	Subsite value eutered with INITIALI.C immediately
F895	Firm type disagreement (destination mismatch)	When the destination and type of used firm differ	Sys	Defined in DEFMAIN.H
F896	Firm type disagreement (non-existent jumper)	When a jumper falling under no type is set	Sys	Defined in DEFMAIN.H
F897	Incomplete initialization	When initialization is not performed after firm writing	Sys	Defined in DEFMAIN.H
F898	Disagreement between the AV Dec hardware version and the system controller firm type	When the destination and type of used firm differ	Sys	
F899	Disagreement between system controller and panel controller communication specifications	Mismatch in firm/product numbers for the system controller and panel controller used	Sys Panel	Mounted on D9-generation and newer models
F8A0	Message command is improper	Player system error	Disc	Player control software operation is abnormal
0xB000	Target file was not found	DVD-RAM disc management data error (recorded in the DVD-VR format)	Disc	
0xB001	Disc is not DVD-RAM or RW	DVD disc management data error	Disc	Set when UDF management data error occurs
0xA002	For hang-up prevention, no error.	CD mediaDisc management data error	Disc	Set for hang-up prevention when the ISO9660 pass table for CD-ROM is abnormal.

Note:

An error code will be canceled if a power supply is turned OFF.

*1: CPPM is the copy guard function beforehand written in the disc for protection of copyrights.

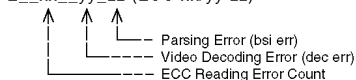
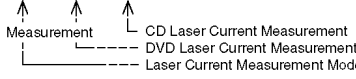
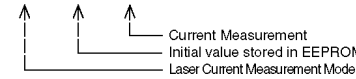
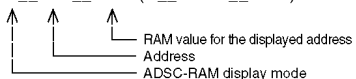
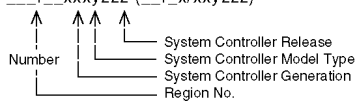
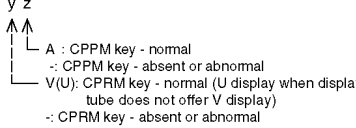
9.5. Last Error Code saved during NO PLAY

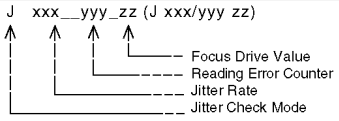
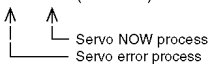
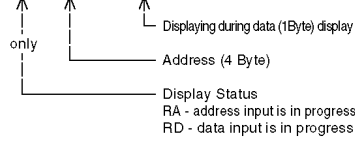
Error code	Error Content
F0BF	6) Cannot playback because physical layer is not recognizable
F0C0	8) DVD: Cannot playback because it is not DVD Video/Adio/VR
F0C1	9) DVD: Prohibited by the restricted region code
F0C2	A) DVD: PAL restricted playback
F0C3	B) DVD: Parental lock setting prohibits the playback of the entire title
F0C4	C) VCD: Prohibited because it is in PHOTO CD fromat
F0C5	VCD/CD: Prohibited because it is CDROM without CD-DA

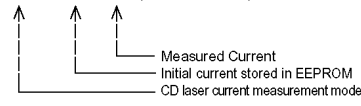
9.6. Service mode table

Pressing various button combinations on the player and remote control unit can activate the service modes.

Player Mode and Button Combination	Function	Display	Cancellation Method	Panel Controller Command	Remarks	Marvie Transmission
In STOP mode, press PAUSE and PLAY button son the player, and "1" buttonon the remote control unit.	Reliability Test Mode 1 for DL1T1 playback (20 sec.) -> T10 playback (20sec.) -> T1 playback (20 sec.) -> STOP -> POWER OFF -> 12 sec. -> POWER ON -> Tray Open -> Tray Close -> Start from beginning		Turn secondary power off.	-	These modes are used in the panel controller only. Nocommand notification is made to the system controller.	○
	Reliability Test Mode 1 for DL2/DL4Tray Open -> Tray Close -> READING ->STOP -> Start from beginning (Stops when nodisc is in the tray)	123456 Number of trials is displayed as a left-aligned 6-digit figure. ("000000" will follow "999999.")				
In STOP mode, press PAUSE and PLAY button son the player, and "2" or SUBTITLE button on the remote control unit.	Reliability Test Mode 2 for DL1T1 playback (30 min.) -> STOP -> POWEROFF -> 30 sec. -> POWER ON -> Tray Open ->Tray Close -> Start from beginning		Turn secondary power off.	-	These modes are used in the panel controller only. Nocommand notification is made to the system controller.	○
	Reliability Test Mode 2 for DL2/DL4T1 playback (30 min.) -> STOP -> POWEROFF -> 30 sec. -> POWER ON -> Tray Open -> Tray Close -> Start from beginning (Stopswhen no disc is in the tray)	123456 Number of trials is displayed as a left-aligned 6-digi tfigure. ("000000" will follow "999999.")				
In STOP mode, press PAUSE and PLAY button son the player, and "3" or AUDIO button on the remote control unit.	Reliability Test Mode 3 for DL1Tray Open -> Tray Close -> Start frombeginning		Turn secondary power off.	-	These modes are used in the panel controller only. Nocommand notification is made to the system controller.	○
	Reliability Test Mode 3 for DL2/DL4T1 playback (2 sec.) -> T10 playback (2 sec.)-> STOP -> Tray Open -> Tray Close ->Reading -> Start from beginning (Stops whenno disc is in the tray)	123456 Number of trials is displayed as a left-aligned 6-digit figure. ("000000" will follow "999999.")				
In STOP mode, press PAUSE and PLAY button son the player, and "4" or ANGLE button on theremote control unit.	Reliability Test Mode 4 for DL1T1 playback (30 sec.) -> T10 playback (30sec.) -> Start from beginning		Turn secondary power off.	-	These modes are used in the panel controller only. Nocommand notification is made to the system controller.	○
	Reliability Test Mode 4 for DL2/DL4T1 playback (2 sec.) -> T10 playback (2 sec.)-> Start from beginning	123456 Number of trials is displayed as a left-aligned 6-digit figure. ("000000" will follow "999999.")				
In STOP mode, press STOP and PLAY button son the player, and "9" buttonon the remote control unit.	Reliability Test Mode 5 for DL1T1 playback (150 sec.) -> T10 playback (150sec.) -> T1 playback (150 sec.) -> STOP -> POWER OFF -> 20 sec. -> POWER ON -> Tray Open -> Tray Close -> Start from beginning		Turn secondary power off.	-	This mode is used in the panel controller only. Nocommand notification is made to the system controller. This is a test mode exclusively for DL1 use. Operation stated left is not performed on DL2/DL4.	×
	Reliability Test Mode 5 does not exist for DL2/DL4.			-		
In PLAY mode, press PAUSE and PLAY button son the player, and "5" or TITLE button on the remote control unit.	Jitter check without monitor output.Jitter rate is measured and displayed.Measurement is repeatedly done in the cycleof 1 second. Reading Error Counter startsfrom zero upon mode setting. When datareading in the target block fails, the counteradvances by one increment. When the failureis caused by a minor error, it may becorrected through reading retrials. In thiscase, the counter advances by one. When theerror persists after retrials, the counter mayjump by two or more.	J xxx_yyy_zz (J xxx/yyy zz) 	Press STOP or OPEN button.	B5	TIA output was produced up to D6. New operation for monitor output was established.	○
In STOP mode, press PAUSE and PLAY button son the player, and "6" or CURSOR UP button on the remote control unit.	Region Display	x_yy_zzz_ (xyyzzz) 	Cancelled automatically after 5 sec.	B6		○
In STOP mode, press PAUSE and PLAY button son the player, and "7" or MENU button on the remote control unit.	Version Display	srrr_xxyyzzz (srrr_x/xyyzzz) 	Cancelled automatically after 5 sec.	B7		○

Player Mode and Button Combination	Function	Display	Cancellation Method	Panel Controller Command	Remarks	Marble Transmission
In STOP mode, press PAUSE and PLAY buttons on the player, and "8" or A.SRD button on the remote control unit.	Occurred ECC error and decoding error numbers are displayed. Counters start from zero upon mode setting. They are incremented each time an error occurs. They display the bottom two digits of decimal notation only.	E__xx__yy__zz (ECC xx/yy zz) 	Press STOP or OPEN button.	B8	DV1.3-mounted and newer models (S35 and newer). For verifying the sufficient hardware design margin between 1 chip DVD LSI and external SDRAM.	○
In ** mode, press PAUSE and PLAY buttons on the player, and "9" or CURSOR RIGHT button on the remote control unit.	All display FL/LED are lit.		Press PAUSE and OPEN buttons on the player, and "9" button on the remote control unit.	B9	This mode is used in the panel controller only. No command notification is made to the system controller.	○
In ** mode, press PAUSE and PLAY buttons on the player, and "0" or CURSOR LEFT button on the remote control unit. * When the cursor on the display is moved up or down, the panel controller's history number changes, the unit sends out the command accordingly.	Error Code Display The latest error code stored in EEPROM is displayed.	Error code (play_err) is expressed as follows. Error code = 0xDAXX -> nn UXX(/nn UXX) Error code = 0xDBXX -> nn HXX(/nn HXX) Error code = 0xDXXX -> nn FXXX(/nn FXXX) Error code = 0x0000 -> nn F---(/nn F---) Other error codes -> nnXXXX(/nnXXXX) "nn" denotes history number.	Cancelled automatically after 5 sec.	BA + required history number		○
In STOP mode, press PAUSE and PLAY buttons on the player, and PAUSE button on the remote control unit.	Initial Laser Current Measurement Initial laser current and current when the lasers off are measured and stored in EEPROM as initial values.	LD0__034__032 (LD0/034032) 		C2		○
In STOP mode, press PAUSE and PLAY buttons on the player, and DISPLAY button on the remote control unit.	Laser Current Display Laser current is measured and displayed with the initial value stored in EEPROM. Wrong laser current is displayed when initial value required for calculation is not supplied.	LDD__034__032 (LDD/034032) 		C3		○
In ** mode, press PAUSE and PLAY buttons on the player, and RETURN button on the remote control unit.	ADSC-RAM display ADSC-RAM values are read and displayed. Address is updated using CLEAR key, and 11 values are displayed.	A__0FA__6901 (A__0FA/A__6901) 	Press STOP or OPEN button.	C4		○
In ** mode, press PAUSE and PLAY buttons on the player, and CLEAR button on the remote control unit.	ADSC-RAM display Same as above	Same as above	Press STOP or OPEN button.	C5		○
In STOP mode, press PAUSE, BWD-SKIP and OPEN buttons on the player for 3 sec. or longer.	User Initialization User settings are cancelled and the player is initialized to factory setting.	*INITIALIZED* (INIT) (7SEG : INI)	None	BC + Model Table		○
In STOP mode, press PAUSE and BWD-SKIP buttons on the player, and MENU button on the remote control unit.	Fukushima Factory test mode is switched "ON."	*FT02* (FT 02)	Initialization	BF +0 × 80		○
In STOP mode, press PAUSE and BWD-SKIP buttons on the player, and DISPLAY button on the remote control unit.	Region and System Confirmation Version display	__r__xxxxzzz (__r_x/xyzzz) 	Cancelled automatically after 5 sec.	BF +0 × 92		○
In STOP mode, press PAUSE and BWD-SKIP buttons on the player, and "1" button on the remote control unit.	CPPM/CPRM Key Confirmation Whether the check sum value for the key in EEPROM is normal or not is judged. The result is displayed. Reliability equivalent to key-supplied disc playback is not guaranteed. (Whether the original key is official or not can not be judged because the check sum provided upon storage is used.)	y z 	Cancelled automatically after 5 sec.	BF +0 × 10	D81 series had newer models. One-character display is used to prepare for key (HighMAT) increase in the future. Check sum is not displayed because it is not usable for judgment on key value uniqueness. (Operation may be necessary for FL 6-digit figures.)	○
In all modes, press PAUSE and BWD-SKIP buttons on the player, and "2" button on the remote control unit.	Communication error display Number of communication errors per 30 communications is displayed.	*ERR 02 / 30* (ERR 02/30)	Cancelled automatically after 5 sec.	BF +0 × 11		○

Player Mode and Button Combination	Function	Display	Cancellation Method	Panel Controller Command	Remarks	Marvie Transmission
In all modes, press PAUSE and BWD-SKIP buttons on the player, and "8" button on the remote control unit.	Debug variable display mode List of debug variables is displayed on GUI.	Normal	Turn secondary power off. Press PAUSE and BWD-SKIP buttons on the player, and "9" button on the remote control unit.	BF +0 × 17		○
While a debug variable is displayed, press PAUSE and BWD-SKIP on the player, and "9" button on the remote control unit.	Debug variable display mode is cancelled.	Normal display	73L	BF +0 × 18		○
In PLAY mode, press PAUSE and FWD-SKIP buttons on the player, and "1" button on the remote control unit.	Jitter check with monitor output Jitter rate is measured and displayed. Measurement is repeatedly done in the cycle of 1 second. Reading error counter starts from zero upon mode setting. When data reading in the target block fails, the counter advances by one increment. When the failure is caused by a minor error, it may be corrected through reading retrials. In this case, the counter advances by one. When the error persists after retrials, the counter may jump by two or more.	 <p>Jitter Rate is shown in decimal notation to one place of decimal.</p>	Press STOP or OPEN button.	B1 +0 × 10	D7 was established. (No open key was available for realizing jitter display without monitor output, and for replacing only one operation key.)	○
In STOP mode, press PAUSE and FWD-SKIP buttons on the player, and "4" button on the remote control unit.	Device Name display Versions for DV series displayed (in order). (HDMI and other features are scheduled as an addition in S95 and other models.)	<p>CPU type DV_ 3201 (DV_ /3201)</p> <p>Display : G-Code (Common name) DV_ 2101 : MN2DS0003VPH (DV2.1VP) DV_ 2102 : MN2DS03VP1H (DV2.1VP1) or MN2DS0003APH (DV2.1AP) DV_ 2001 : MN2DS0005VP (DV2.0VP) or MN2DS0005AP (DV2.0AP) DV_ 2201 : MN2DS0004APH (DV2.2) DV_ 3201 : MN2DS0009AP (DV3.2)</p> <p>FlashROM type F_A (F_A /) Display : Flash Method F_A : AMD Method F_I : INTEL Method F_S : SST Method F_--- : Undetected</p> <p>(Note) Identification for Flash ROM type may not be possible without initialization.</p>	Display is switched automatically after 3 sec. Cancelled automatically after is playing the last device.	B1 +0 × 13		○
In STOP mode, press PAUSE and FWD-SKIP buttons on the player, and "5" button on the remote control unit.	Timer 1 check Laser using time/Periods are measured separately for DVDlaser and CD laser.	T 1_1234_ 5678 (T11234/_ 5678) DVD laser and CD laser using times are displayed left and right, respectively. Time is displayed as a 4-digit figure in decimal notation, using 10 hours as a unit. "0000" will follow "9999."	Cancelled automatically after 5 sec.	B1 +0 × 14		○
While the laser using time is displayed, press STOP and FWD-SKIP buttons on the player, and "5" button on the remote control unit.	Timer 1 reset Laser using time	T 1_0000_0000 (T10000/0000)	Cancelled automatically after 5 sec.	B2 +0 × 14		○
In STOP mode, press PAUSE and FWD-SKIP buttons on the player, and "6" button on the remote control unit.	Timer 2 check Spindle Motor using time	T 2_12345 (T21234/5) Time is displayed as 5-digit decimal figures. "00000" will follow "99999."	Cancelled automatically after 5 sec.	B1 +0 × 15		○
While the spindle Motor using time is displayed, press STOP and FWD-SKIP buttons on the player, and "6" button on the remote control unit.	Timer 2 reset Spindle Motor using time	T 2_00000 (T20000/0)	Cancelled automatically after 5 sec.	B2 +0 × 15		○
In STOP mode, press PAUSE and FWD-SKIP buttons on the player, and "7" button on the remote control unit.	Servo Process display From STOP to access, Servo Process is displayed. Processes beyond PLAY are displayed normally.	 <p>Servo NOW process Servo error process</p>	Turn secondary power off.	B1 +0 × 16		○
In all modes, press PAUSE and FWD-SKIP buttons on the player, and "8" button on the remote control unit.	System Controller Memory Access Eight-digit address in hexadecimal notation is entered and established with [ENTER]. After address establishment, a 1-Byte value is displayed to the right of the address. Displaying value is updated in real-time. Address for data display can be changed by 1 Byte with [UP] and [DOWN] buttons, and 16 Bytes with [LEFT] and [RIGHT] buttons. [UP], [RIGHT], [DOWN], [LEFT], [TOP MENU] and [MENU] are available for entering numbers 0 to 9 and letters A to F in address. Display may not be available depending on addresses.	 <p>Address (4 Byte) Display Status RA - address input is in progress RD - data input is in progress Displaying during data (1Byte) display</p>	Turn secondary power off. Press PAUSE and BWD-SKIP buttons on the player, and "9" button on the remote control unit.	B1 +0 × 17		○

Player Mode and Button Combination	Function	Display	Cancellation Method	Panel Controller Command	Remarks	Marble Transmission
While the system controller memory access is displayed, press PAUSE and FWD-SKIP button on the player, and "9" button on the remote control unit.	System controller memory access is cancelled.	Normal display	None	B1 +0 × 18		○
In STOP mode, press PAUSE and FWD-SKIP buttons on the player, and DISPLAY button on the remote control unit. Perform measurement again after turning the player off and on in succession (reason: the laser lamp is on).	CD Laser Current Measurement CD laser current is measured and displayed with the initial value stored in EEPROM.	<p>LDC_028_026 (LCD/028026)</p>  <p>The value denotes the current in decimal notation. The above example shows the initial current as 28mA and the measured value as 26mA.</p>	Cancelled automatically after 5 sec.	0 × B1 +0 × 92		○
In all modes, press PAUSE and PLAY buttons on the player, and AB-REPEAT button on the remote control unit.	AD value check on the player key	<p><SS panel controller> When lines are five A D _ F F F F (/ A F F F F) ↑ From left to right, AD values for lines 1, 2, 3, 4, and 5.</p> <p>When lines are three A D _ F F F (/ A D F F F) ↑ From left to right, AD values for lines 1, 2, and 3.</p> <p><Sanyo panel controller> A D _ F F F (A D / F F F) ↑ From left to right, AD values for lines 1, 2, and 3.</p>	Turn secondary power off.	-	These modes are used in the panel controller only. No command notification is made to the system controller.	○
In STOP mode, press STOP and PLAY buttons on the player, and "2" button on the remote control unit.	Test mode/LCD adjustment mode is switched "ON."	"FT04" (FT04)	LCD adjustment mode	-		×

9.7. Lens cleaning

When cleaning the lens, use the lens cleaner which product part No. SZZP1038C.

10 SERVICE PRECAUTIONS

10.1. Recovery after the dvd player is repaired

- When FROM or main P.C.B. is replaced, carry out the recovery processing to optimize the drive.
Playback the recovery disk to process the recovery automatically.
- Recovery disc (Product number: RFKZD03R005)
- Performing recovery
 1. Load the recovery disc RFKZD03R005 on to the player and run it.
 2. Recovery is performed automatically. When it is finished, a message appears on the screen.
 3. Remove the recovery disc.
 4. Turn off the power.

Note:

This unit requires no initialization process carried out after the traditional DVD players were repaired.

When the recovery measures are taken, the customer setting will return to the factory setting as same as the procedure described in item of "Initialization" in 9.6. is carried out. Write down the contents of the setting before recovery processing, and reset the player.

10.2. Firmware version-up of the DVD player

- The firmware of the DVD player may be renewed to improve the quality including operationability and playerbility to the substandard discs.processing to optimize the drive.
The recovery disc has also firmware version-up.
- After version-up, recovery processing is executed automatically.
- Part number of the recovery disc for version-up will be noticed when it is supplied.
- Updating firmware
 1. Load the recovery disc that is supplied to the player and run it.
 2. Firmware version of the player is automatically checked. Appropriate message appears whenever necessary.
 3. Using remote controller's cursor key, select whether version updating is to be done or not. (Selection of Yes/No)
 4. a. If Yes is selected, version updating is performed.
 - b. If No is selected, only recovery is performed.
 5. a. When updating is finished, remove the disc according to the message appearing on the screen.
 - b. Remove the disc according to the message appearing on the screen.
 6. Turn off the power.

Note:

If the AC power supply is shut out during version-up due to a power failure, the version-up is improperly carried out. In such a case, replace the FROM and carry out the version-up again.

11 ADJUSTMENT PROCEDURES

<Caution>

Be sure to take static electricity countermeasures before adjusting the optical system. Adjust the optical systems according to the prescribed procedure.

11.1. Service Tools and Equipment

Application	Name	Number
Tilt adjustment	DVD test disc	DVDT-S15AS or DVDT-S01
Inspection	Extension cable (Traverse ass'y to main P.C.B.)	RFKZ0104 (30Pin)
	Extension cable (Traverse ass'y to main P.C.B.)	RFKZ0303 (18Pin)
	Tilt adj. jig	RFKZ0118
Others	Screw lock	RZZ0L01
	Grease	JGS0101
	Lubricating oil	RFKXGUD24
Confirmation	CD test disc	PVCD-K06 or any other commercially available disc
	VCD test disc	PVCD-K06 or any other commercially available disc
	Recovery disc	RFKZD03R005

11.2. Important points in adjustment

11.2.1. Important points in optical adjustment

- Optical pickup tilt adjustment is needed after replacement of the following components.

- Optical pickup unit
- Disc motor
- Traverse motor
- Optical pickup peripheral parts (such as rail)

Notes

Adjustment is generally unnecessary after replacing other parts of the traverse unit. However, make adjustment if there is a noticeable degradation in picture quality.

Optical adjustments cannot be made inside the optical pickup.

11.2.2. Important points in electrical adjustment

- Follow the adjustment procedures described in this Manual.

11.3. Storing and Handling Test Discs

- Surface precision is vital for DVD test discs. Be sure to store and handle them carefully.

- Do not place discs directly onto the workbench, etc., after use.
- Handle discs carefully in order to maintain their flatness. Place them into their case after use and store them vertically. Store discs in a cool place where they are not exposed to direct sunlight or air from air conditioners.
- Accurate adjustment will not be possible if the disc is warped when placed on a surface made of glass, etc. If this happens, use a new test disc to make optical adjustments.
- If adjustment is done using a warped disc, the adjustment will be incorrect and some discs will not be playable.

11.4. Optical adjustment

11.4.1. Optical pick gate adjustment

Measurement point	Adjustment point	Mode	Disc
-----	Tangential adjustment screw (Adjustment screw A)	Tracking servo "ON"	DVDT-S01/S15AS
	Radial tilt adjustment screw (Adjustment screw B)	Tracking servo "ON"	
Measuring apparatus		Adjustment value	
None (Use the service indication on the main unit)		Adjust the jitter value to the minimum level.	

Remove the solder shorts before trying to make the adjustment.

11.4.1.1. Preparations

1. Connect the main P.C.B. to the traverse ass'y with the extension cable.
2. Install the traverse ass'y to the tilt adjustment jig with three screws and three washers.

Caution

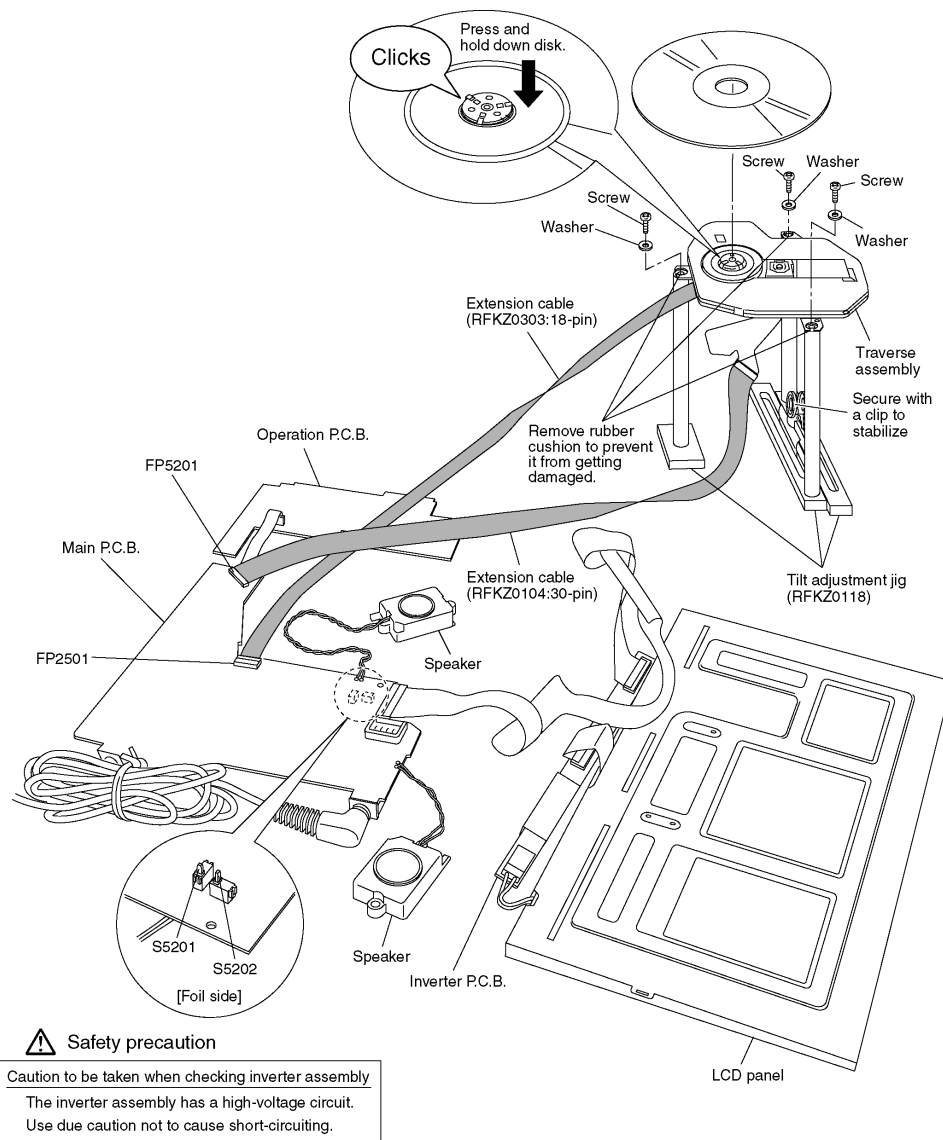
Remove the rubber cushion of the traverse ass'y.

3. Install the traverse ass'y to the disc.

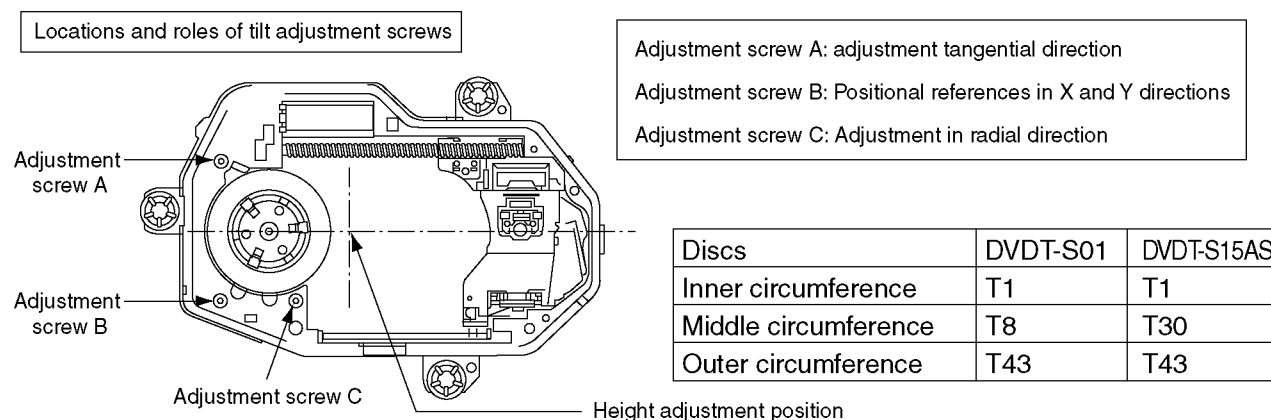
Caution

Make sure the disc is installed on the disc motor securely.

4. Disassemble the Main P.C.B., Operation P.C.B., Inverter P.C.B. and LCD panel as shown in figure below.
5. The disc cannot be played back with the Disc cover attached. Press and hold down the S5201 and S5202 (Secure with cellulose tape)

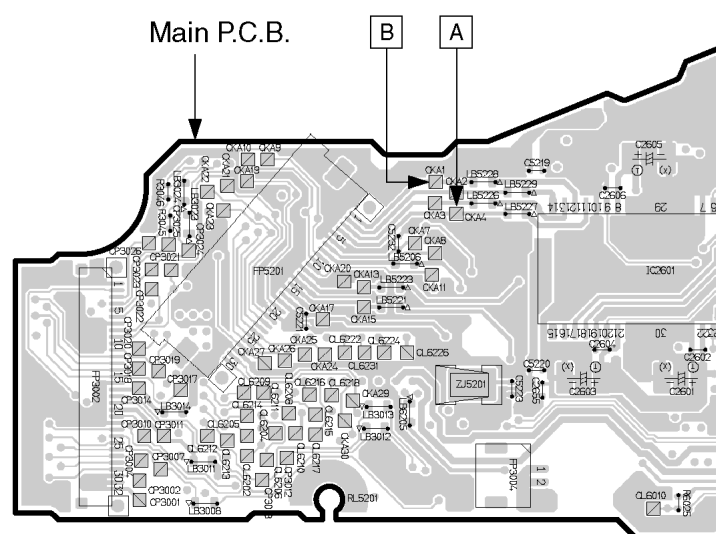


11.4.1.2. Adjustment



1. Play back the disc (DVDT-S01/S15AS) and make sure the RF signal is outputted.
2. Play back the areas within a radius of 40 ± 1 mm of the disc (middle circumference).
3. Turn the adjustment screw C to minimize the jitter value in the radial direction.
(*Once turn the screw to the full position and then back off. You should finish tightening in the tightening direction.)
4. Turn the adjustment screw A to minimize the jitter value in the tangential direction.
(*Once turn the screw to the full position and then back off. You should finish tightening in the tightening direction.)
5. DISC height measurement (Measure the middle of the deflection of the disc and motor surface.)

The height of the turntable is accepted in case of being less than 1.0V in the DC potential difference on driver IC side of A (CKA4) and B (CKA1). (The voltmeter negative is connected and A and positive are connected B.)



*If the measured height is out of range, adjust to the specified value using the adjustment screws A, B, and C (by the same angle).

11.4.1.3. Checking after adjustment

Play back the test disc and ordinary discs to make sure that there is not any deterioration of image quality or missing of sound at the inner, middle, and outer circumferences.

11.5. Electrical adjustment (LCD)

[How to enter into the LCD panel adjustment mode]

Play back the specified video signal (10 steps, color bar signal).

Press and hold down "Back skip" and "Pause" of the main unit at the same time while pressing "Menu" on the remote control unit.

[The DVD player is now in the FT02 mode]

Press the "Forward skip button twice to enter into the FT04 mode (LCD panel adjustment mode).

Press the "Playback" button to play back the signal which has been played back before stopping and then, press the "Pause (still) button.

[How to exit to normal mode]

(Exit the F4 mode)

1. Turn off the primary power supply (Remove the DC power supply).

Turn on the power supply. Press the "Stop" to stop the system.

Press "Cancel" on the remote control unit (The Cancel key is enabled only when the system is stopped.)

●Whenever the LCD panel is replaced, make the following checks and adjustments.

●Press the "Enter" key and fix the settings.

●When the EEPROM" (IC3002) of the Main P.C.B. is replaced, call up the LCD Panel adjustment mode (FT04) and execute the AUDIO on the remote control unit and then check the condition of the screen. Make adjustments as necessary.

11.5.1. Adjusting VCO oscillation frequency

Adjustment is required when	Check point	
The synchronization of the LCD screen is irregular after any VCO-related circuit part is replaced	TP8201	
Adjustment procedure	Adjustment UP	Adjustment DOWN
Use "1" on remote control unit.	DVD player/remote control unit △	DVD player/remote control ▽
Details of adjustment	Input video signal	
Press "△" and "▽" buttons on remote controller, set the right side number to "71".	-----	

11.5.2. Adjusting DC offset of impressed voltage

Adjustment is required when	Check point	
Noise such as horizontal stripes is found on the screen.	TL8401	
Adjustment procedure	Adjustment UP	Adjustment DOWN
Use "3" on remote control unit.	DVD player/remote control unit △	DVD player/remote control ▽
Details of adjustment	Input video signal	
Press "△" and "▽" buttons on remote controller, set the right side number to "A1".	10step monochrome	

11.5.3. Adjusting white balance red/subcontrast red

Adjustment is required when	Check point	
Remarkable deviation in white balance is found	TL8602	
Adjustment procedure	Adjustment UP	Adjustment DOWN
Use "6" on remote control unit.	DVD player/remote control unit △	DVD player/remote control ▽
Details of adjustment	Input video signal	
(White balance) Press "▷" and "◁" buttons on remote controller, set the number of center to "80". (Sub contrast) Press "△" and "▽" buttons on remote controller, set the right side number to "7E".	10step monochrome	

11.5.4. Adjusting whitebalance blue/subcontrast blue

Adjustment is required when	Check point	
Remarkable deviation in white balance is found	TL8604	
Adjustment procedure	Adjustment UP	Adjustment DOWN
Use "7" on remote control unit.	DVD player/remote control unit △	DVD player/remote control ▽
Details of adjustment	Input video signal	
(White balance) Press "▷" and "◁" buttons on remote controller, set the number of center to "71". (Sub contrast) Press "△" and "▽" buttons on remote controller, set the right side number to "84".	10step monochrome	

11.5.5. Adjusting amplitude of impressed voltage

Adjustment is required when	Check point	
-----	TL8401	
Adjustment procedure	Adjustment UP	Adjustment DOWN
Use "2" on remote control unit.	DVD player/remote control unit △	DVD player/remote control ▽
Details of adjustment	Input video signal	
Press "△" and "▽" buttons on remote controller, set the right side number to "15".	10step monochrome	

11.5.6. Adjusting pedestal

Adjustment is required when	Check point	
-----	TL8603	
Adjustment procedure	Adjustment UP	Adjustment DOWN
Use "4" on remote control unit.	DVD player/remote control unit ▷	DVD player/remote control ◁
Details of adjustment	Input video signal	
Press "▷" and "◁" buttons on remote controller, set the number of center to "91".	10step monochrome	

11.5.7. Adjusting contrast

Adjustment is required when	Check point	
-----	TL8603	
Adjustment procedure	Adjustment UP	Adjustment DOWN
Use "4" on remote control unit.	DVD player/remote control unit △	DVD player/remote control ▽
Details of adjustment	Input video signal	
Press "△" and "▽" buttons on remote controller, set the right side number to "71".	10step monochrome	

11.5.8. Adjusting TINT

Adjustment is required when	Check point	
-----	TL8604	
Adjustment procedure	Adjustment UP	Adjustment DOWN
Use "5" on remote control unit.	DVD player/remote control unit ▷	DVD player/remote control ◁
Details of adjustment	Input video signal	
Press "▷" and "◁" buttons on remote controller, set the number of center to "75".	75% color bar	

11.5.9. Adjusting color

Adjustment is required when	Check point	
-----	TL8604	
Adjustment procedure	Adjustment UP	Adjustment DOWN
Use "5" on remote control unit.	DVD player/remote control unit △	DVD player/remote control ▽
Details of adjustment	Input video signal	
Press "△" and "▽" buttons on remote controller, set the right number to "81".	75% color bar	

11.6. Electrical check (Video output check)

11.6.1. Checking video output (composite signal)

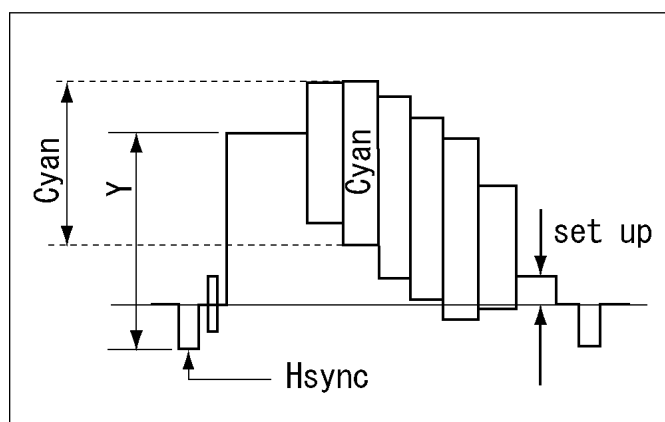
Check point	Mode	Disc
Video output terminal	Color bar playback (75%)	DVDT-S15
Measuring apparatus	Check value	
Oscilloscope	Y: 1000 mV ± 100 mV Cyan: 650 mV ± 100 mV	

Purpose: Keep the interchangeability of video signal output

1. Terminate the composite signal of the video output terminal with 75 Ω and input into the oscilloscope.
2. Select color bar 75% from the titles of the DVD test disc and play back.
3. Check that the composite signal output is the following value:

$$Y = 1000\text{mV} \pm 100\text{mV}$$

$$\text{Cyan} = 650\text{mV} \pm 100\text{mV}$$



12 Abbreviations

INITIAL/LOGO		ABBREVIATIONS
A	A0-UP	ADDRESS
	ACLK	AUDIO CLOCK
	AD0-UP	ADDRESS BUS
	ADATA	AUDIO PES PACKET DATA
	ALE	ADDRESS LATCH ENABLE
	AMUTE	AUDIO MUTE
	AREQ	AUDIO PES PACKET REQUEST
	ARF	AUDIO RF
	ASI	SERVO AMP INVERTED INPUT
	ASO	SERVO AMP OUTPUT
B	ASYN	AUDIO WORD DISTINCTION SYNC
	BCK	BIT CLOCK (PCM)
	BCKIN	BIT CLOCK INPUT
	BDO	BLACK DROP OUT
	BLKCK	SUB CODE BLOCK CLOCK
	BOTTOM	CAP. FOR BOTTOM HOLD
C	BYP	BYPATH
	BYTCK	BYTE CLOCK
	CAV	CONSTANT ANGULAR VELOCITY
	CBDO	CAP. BLACK DROP OUT
	CD	COMPACT DISC
	CDSC	CD SERIAL DATA CLOCK
	CDSRDATA	CD SERIAL DATA
	CDRF	CD RF (EFM) SIGNAL
	CDV	COMPACT DISC-VIDEO
	CHNDATA	CHANNEL DATA
D	CKSL	SYSTEM CLOCK SELECT
	CLV	CONSTANT LINEAR VELOCITY
	COFTR	CAP. OFF TRACK
	CPA	CPU ADDRESS
	CPCS	CPU CHIP SELECT
	CPDT	CPU DATA
	CPH1~3	CLOCK PULSE SOURCE DRIVE
	CPUADR	CPU ADDRESS LATCH
	CPUADT	CPU ADDRESS DATA BUS
	CPUIRQ	CPU INTERRUPT REQUEST
E	CPRD	CPU READ ENABLE
	CPV	GATE DRIVER CLOCK PULSE
	CPWR	CPU WRITE ENABLE
	CS	CHIP SELECT
	CSYN	COMPOSITE SYNC IN
	CSYNOUT	COMPOSITE SYNC OUT
	DACCK	D/A CONVERTER CLOCK
	DEEMP	DEEMPHASIS BIT ON/OFF
	DEMPH	DEEMPHASIS SWITCHING
	DIG0-UP	FL DIGIT OUTPUT
F	DIN	DATA INPUT
	DMSRCK	DM SERIAL DATA READ CLOCK
	DMUTE	DIGITAL MUTE CONTROL
	DO	DROP OUT
	DOUT0-UP	DATA OUTPUT
	DRF	DATA SLICE RF (BIAS)
	DRPOUT	DROP OUT SIGNAL
	DREQ	DATA REQUEST
	DRESP	DATA RESPONSE
	DSC	DIGITAL SERVO CONTROLLER
G	DSL	DATA SLICE LOOP FILTER
	DVD	DIGITAL VIDEO DISC

INITIAL/LOGO		ABBREVIATIONS
E	EC	ERROR TORQUE CONTROL
	ECR	ERROR TORQUE CONTROL
	ENCSEL	REFERENCE
	ETMCLK	ENCODER SELECT
	ETSC	EXTERNAL M CLOCK (81MHz/40.5MHz)
	ETSC	EXTERNAL S CLOCK (54MHz)
	FBAL	FOCUS BALANCE
	FCLK	FRAME CLOCK
	FE	FOCUS ERROR
	FFI	FOCUS ERROR AMP INVERTED INPUT
F	FEO	FOCUS ERROR AMP OUTPUT
	FG	FREQUENCY GENERATOR
	FSC	FREQUENCY SUB CARRIER
	FSCK	FS (384 OVER SAMPLING) CLOCK
	GND	COMMON GROUNDING (EARTH)
	HA0-UP	HOST ADDRESS
	HD0-UP	HOST DATA
	HINT	HOST INTERRUPT
	HRXW	HOST READ/WRITE
	IECOUT	IEC958 FORMAT DATA OUTPUT
I	IPFRAG	INTERPOLATION FLAG
	IREF	I (CURRENT) REFERENCE
	ISEL	INTERFACE MODE SELECT
	LDCN	LASER DIODE CONTROL
	LPC	LASER POWER CONTROL
	LRCK	L CH/R CH DISTINCTION CLOCK
	MA0-UP	MEMORY ADDRESS
	MCK	MEMORY CLOCK
	MCKI	MEMORY CLOCK INPUT
	MCLK	MEMORY SERIAL COMMAND CLOCK
L	MDATA	MEMORY SERIAL COMMAND DATA
	MDQ0-UP	MEMORY DATA INPUT/OUTPUT
	MDQM	MEMORY DATA I/O MASK
	MLD	MEMORY SERIAL COMMAND LOAD
	MPEG	MOVING PICTURE EXPERTS GROUP
	ODC	OPTICAL DISC CONTROLLER
	OEH	SOURCE DRIVER OUTPUT ENABLE
	OEV 1, 2	GATE DRIVER OUTPUT ENABLE
	OFTR	OFF TRACKING
	OSCI	OSCILLATOR INPUT
O	OSCO	OSCILLATOR OUTPUT
	OSD	ON SCREEN DISPLAY
	P1-UP	PORT
	PCD	CD TRACKING PHASE DIFFERENCE
	PCK	PLL CLOCK
	PDVD	DVD TRACKING PHASE DIFFERENCE
	PEAK	CAP. FOR PEAK HOLD
	PLLCLK	CHANNEL PLL CLOCK
	PLLOK	PLL LOCK
	PWMCTL	PWM OUTPUT CONTROL
P	PWMDA	PULSE WAVE MOTOR DRIVE A
	PWMOA, B	PULSE WAVE MOTOR OUT A, B

INITIAL/LOGO		ABBREVIATIONS
R	RE	READ ENABLE
	RFENV	RF ENVELOPE
	RFO	RF PHASE DIFFERENCE OUTPUT
	RS	(CD-ROM) REGISTER SELECT
	RSEL	RF POLARITY SELECT
	RST	RESET
S	RSV	RESERVE
	SBI0, 1	SERIAL DATA INPUT
	SBO0	SERIAL DATA OUTPUT
	SBT0, 1	SERIAL CLOCK
	SCK	SERIAL DATA CLOCK
	SCKR	AUDIO SERIAL CLOCK RECEIVER
	SCL	SERIAL CLOCK
	SCLK	SERIAL CLOCK
	SDA	SERIAL DATA
	SEG0~UP	FL SEGMENT OUTPUT
	SELCLK	SELECT CLOCK
	SEN	SERIAL PORT ENABLE
	SIN1, 2	SERIAL DATA IN
	SOUT1, 2	SERIAL DATA OUT
	SPDI	SERIAL PORT DATA INPUT
	SPDO	SERIAL PORT DATA OUTPUT
	SPEN	SERIAL PORT R/W ENABLE
	SPRCLK	SERIAL PORT READ CLOCK
	SPWCLK	SERIAL PORT WRITE CLOCK
	SQCK	SUB CODE Q CLOCK
	SQCX	SUB CODE Q DATA READ CLOCK
	SRDATA	SERIAL DATA
	SRMADR	SRAM ADDRESS BUS
	SRMDT0~7	SRAM DATA BUS 0~7
	SS	START/STOP
	STAT	STATUS
	STCLK	STREAM DATA CLOCK
	STD0~UP	STREAM DATA
	STENABLE	STREAM DATA INPUT ENABLE
	STH	SOURCE START PULSE
	STSEL	STREAM DATA POLARITY SELECT
	STV	GATE DRIVER SCAN START PULSE
	STVALID	STREAM DATA VALIDITY
	SUBC	SUB CODE SERIAL
	SBCK	SUB CODE CLOCK
	SUBQ	SUB CODE Q DATA
	SYSCLK	SYSTEM CLOCK
T	TE	TRACKING ERROR
	TIBAL	BALANCE CONTROL
	TID	BALANCE OUTPUT 1
	TIN	BALANCE INPUT
	TIP	BALANCE INPUT
	TIS	BALANCE OUTPUT 2
	TPSN	OP AMP INPUT
	TPSO	OP AMP OUTPUT
	TPSP	OP AMP INVERTED INPUT
	TRCRS	TRACK CROSS SIGNAL
	TRON	TRACKING ON
	TRSON	TRAVERSE SERVO ON

INITIAL/LOGO		ABBREVIATIONS
V	VBLANK	V BLANKING
	VCC	COLLECTOR POWER SUPPLY VOLTAGE
	VCDCONT	VIDEO CD CONTROL (TRACKING BALANCE)
	VDD	DRAIN POWER SUPPLY VOLTAGE
	VFB	VIDEO FEED BACK
	VREF	VOLTAGE REFERENCE
W	VSS	SOURCE POWER SUPPLY VOLTAGE
	WAIT	BUS CYCLE WAIT
	WDCK	WORD CLOCK
	WEH	WRITE ENABLE HIGH
X	WSR	WORD SELECT RECEIVER
	X	X' TAL
	XALE	X ADDRESS LATCH ENABLE
	XAREQ	X AUDIO DATA REQUEST
	XCDROM	X CD ROM CHIP SELECT
	XCS	X CHIP SELECT
	XCSYNC	X COMPOSITE SYNC
	XDS	X DATA STROBE
	XHSYNCO	X HORIZONTAL SYNC OUTPUT
	XHINT	XH INTERRUPT REQUEST
	XI	X' TAL OSCILLATOR INPUT
	XINT	X INTERRUPT
	XMW	X MEMORY WRITE ENABLE
	XO	X' TAL OSCILLATOR OUTPUT
	XRE	X READ ENABLE
	XSRMCE	X SRAM CHIP ENABLE
	XSRMOE	X SRAM OUTPUT ENABLE
	XSRMWE	X SRAM WRITE ENABLE
	XVCS	X V-DEC CHIP SELECT
	XVDS	X V-DEC CONTROL BUS STROBE
	XVSYNCO	X VERTICAL SYNC OUTPUT

13 VOLTAGE CHART

Note:

- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
- Circuit voltage and waveform described herein shall be regarded as reference information when probing defect point, because it may differ from an actual measuring value due to difference of Measuring instrument and its measuring condition and product itself.

13.1. MAIN P.C.B.

Ref No.	IC1001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PLAY	0.3	9.0	9.0	8.2	0	0	6.1	9.0	3.3	0	0	0.1	2.3	1.8	1.1	1.3	1.0	1.0	2.1	1.1
STOP	0.8	9.0	9.0	8.2	0	0	6.2	9.0	3.4	0	0	0.1	2.3	1.8	1.1	1.3	1.0	1.0	2.1	1.1
Ref No.	IC1001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
PLAY	1.5	1.0	1.0	1.4	1.1	1.9	1.0	1.7	0	0	0	9.0	2.5	1.0	1.0	1.3	1.1	1.8	0.5	0
STOP	1.5	1.0	1.0	1.4	1.1	1.9	1.0	1.7	0	0	0	9.0	2.5	1.0	1.0	1.3	1.1	1.8	0.2	0
Ref No.	IC1001																			
MODE	41	42	43	44	45	46	47	48												
PLAY	0.5	1.0	0	0	3.3	3.3	3.3	0												
STOP	0.2	1.0	0	0	3.3	3.3	3.3	0												
Ref No.	IC1003								IC1004					IC1101						
MODE	1	2	3	4	5	6			1	2	3	4	5		1	2	3	4	5	
PLAY	3.3	0	1.3	5.0	0	5.4			5.4	0	5.4	0	5.0		5.4	0	3.3	0	5.0	
STOP	3.3	0	1.3	5.0	0	5.4			5.4	0	5.4	0	5.0		5.4	0	3.3	0.6	5.0	
Ref No.	IC1401								IC1411					IC1412						
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5		1	2	3	4	
PLAY	8.9	0	0	1.2	11.7	0	8.0	11.8		11.3	0	3.3	9.9	11.0		3.3	8.9	-0.1	0	
STOP	8.7	0	0	1.2	11.7	0	8.0	11.8		11.1	0	3.3	8.9	10.8		3.3	9.0	0	0	
Ref No.	IC1601																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
PLAY	1.3	0.9	5.0	9.3	4.5	0.3	1.0	1.0	0.5	0.9	4.5	0.3	5.6	5.6	0	8.9				
STOP	1.3	0.9	5.0	9.3	4.5	0.2	1.0	1.0	0.7	0.7	4.5	0.2	5.4	5.3	0	8.9				
Ref No.	IC2601																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PLAY	1.6	1.6	1.5	1.6	1.6	1.6	0	5.4	3.2	0	3.1	2.4	2.7	2.8	2.4	2.4	2.4	2.4	0	0
STOP	1.6	1.6	1.6	1.6	1.6	1.6	0	5.4	0	0	2.7	2.7	2.7	2.7	2.4	2.4	2.4	2.4	0	0
Ref No.	IC2601																			
MODE	21	22	23	24	25	26	27	28												
PLAY	5.4	5.4	1.6	1.6	1.6	1.6	3.2	2.8												
STOP	5.4	5.4	1.6	1.6	1.6	1.6	0	2.8												
Ref No.	IC2651																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PLAY	0	0	0	0	0	0	3.5	0	0	2.9	2.9	0	0	2.9	0.8	0	0.6	0	2.4	0
STOP	0	0.1	0.1	0.1	0	0.1	0.1	0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	0	0	0	5.0	5.0
Ref No.	IC2651																			
MODE	21	22	23	24	25	26	27	28												
PLAY	1.6	1.4	3.2	2.5	5.0	0	5.4	5.4												
STOP	1.6	1.6	0	5.0	5.0	0	5.4	5.4												
Ref No.	IC3001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PLAY	1.2	0	3.2	0	3.2	0	0	0	0	0	3.2	3.1	3.2	3.2	0.3	0.9	0.9	1.2	1.7	1.3
STOP	0.5	1.1	0.3	1.5	1.8	0.9	1.3	1.2	0.8	0	3.2	3.1	3.2	3.2	0.3	1.4	1.3	1.1	1.7	1.2
Ref No.	IC3001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
PLAY	1.9	1.3	1.4	1.7	1.9	1.6	0	1.5	1.0	0.9	0.8	0.9	1.1	1.4	1.4	1.3	3.2	1.3	1.1	1.1
STOP	2.1	1.3	1.5	2.1	0.5	1.4	0	2.5	1.1	0.5	0.5	-1.2	0.9	-0.5	1.5	0.8	3.2	-0.1	0.9	1.3
Ref No.	IC3001								IC3002											
MODE	41	42	43	44	45	46	47	48		1	2	3	4	5	6	7	8			
PLAY	1.1	1.1	1.2	1.3	1.3	0	3.2	1.4		0	0	0	0	3.2	3.2	0	3.2			
STOP	1.1	0.8	1.1	1.1	0.9	0	3.2	0.9		0	0	0	0	3.2	3.2	0	3.2			
Ref No.	IC3004																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PLAY	0	0	3.2	0	0	0	0	3.2	0	0	0	0	0	0	0	0	3.2	1.9	1.6	0
STOP	0	0	3.2	0	0	0	0	3.2	0	0	0	0	0	0	0	0	3.2	3.2	3.2	0.5

Ref No.	IC3004																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
PLAY	0	1.1	1.1	0.9	0.8	0.8	1.1	1.4	1.4	1.2	1.3	1.2	1.2	0	3.2	1.1	1.1	1.2	1.3	1.3
STOP	0	1.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0	3.2	1.1	0.8	1.1	1.0	0.8
Ref No.	IC3004																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
PLAY	1.3	1.2	0.9	0	1.1	0.8	1.2	1.7	1.6	1.1	1.1	0	3.2	0.5	3.2	0.8	0.9	1.3	1.7	1.3
STOP	0.9	0.5	1.0	0	1.1	0.3	1.5	1.8	0.8	1.3	1.3	0	3.2	0.8	3.2	1.4	1.3	1.1	1.7	1.2
Ref No.	IC3004																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
PLAY	1.9	1.4	1.4	1.8	0	3.2	3.2	0	3.2	0	0	3.0	3.0	2.6	2.9	3.2	3.2	2.8	0	0
STOP	2.0	1.3	1.5	2.1	0	3.2	3.2	0	3.2	0	0	3.0	3.0	3.2	3.2	3.2	3.2	2.8	0	3.2
Ref No.	IC3004																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
PLAY	0.1	0	1.1	3.1	1.9	3.2	3.2	3.2	3.2	1.4	1.6	0	3.2	3.2	3.2	3.2	3.2	0	3.2	3.2
STOP	3.2	0	1.1	3.2	3.2	0	0	0	3.2	1.6	1.6	0	3.2	3.2	3.2	3.2	3.2	0	3.2	3.2
Ref No.	IC3004																			
MODE	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
PLAY	3.2	3.2	0.9	0	2.2	1.7	0	0	1.7	3.2	0.3	0.3	1.8	1.8	1.6	1.6	1.6	1.6	3.2	1.8
STOP	3.2	3.2	0.9	0	2.2	1.7	0	0	1.7	3.2	0.2	0.2	0	1.8	1.6	1.6	1.6	1.6	3.2	3.2
Ref No.	IC3004																			
MODE	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
PLAY	1.3	0	0.2	1.0	0.2	0	2.2	1.6	2.6	2.7	2.7	2.6	2.7	2.6	2.4	2.5	2.4	2.5	1.8	1.6
STOP	1.3	0	0	0	0	0	0.3	1.6	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	1.9	1.6
Ref No.	IC3004																			
MODE	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
PLAY	1.5	1.6	0	1.6	1.4	3.2	0.8	0.8	0.5	3.2	2.1	1.0	1.0	2.1	0	0.5	0.6	3.2	0	3.2
STOP	1.6	1.6	0	1.6	1.6	3.2	0.8	0.8	0.4	3.2	2.1	1.0	1.0	2.1	0	0.4	0.8	3.2	0	3.2
Ref No.	IC3004																			
MODE	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
PLAY	0.5	1.5	1.5	0	1.1	1.6	1.6	1.6	0.8	0	0	0.8	1.3	0	3.2	0	0	0	0	0
STOP	0	1.5	0	0	1.1	1.4	1.6	1.6	0	0	0	0.5	1.3	0	3.2	0	0	0	0	0
Ref No.	IC3004																			
MODE	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
PLAY	0	0	0	3.2	0	0	3.2	3.2	0	0	0	0	0	0	0	0	3.2	2.0	2.4	2.7
STOP	0	0	0	3.2	0	0	3.2	3.2	0	0	0	0	0	0	0	0	3.2	2.9	2.7	2.8
Ref No.	IC3004																			
MODE	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
PLAY	2.5	2.6	2.5	3.2	0	2.6	2.3	2.4	2.3	2.4	2.3	2.4	2.6	3.2	0	2.4	2.4	1.0	1.9	1.9
STOP	3.0	2.9	3.2	3.2	0	3.0	2.9	2.9	3.1	2.9	3.0	3.2	2.9	3.2	0	2.7	2.8	1.1	2.6	2.6
Ref No.	IC3004																			
MODE	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
PLAY	3.1	0	1.5	3.2	1.5	0	3.0	3.0	2.8	0	1.5	0	0	1.1	1.6	0	0	0	3.2	1.5
STOP	3.1	0	1.5	3.2	1.5	0	3.1	3.1	3.0	0	2.0	0	0	1.1	1.5	0	0	0	3.2	1.4
Ref No.	IC3004																IC3007			
MODE	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256		1	2	3
PLAY	0.2	1.7	0.3	1.7	0.4	1.3	1.7	0	3.2	0	0	0	0	0	0	0		0	3.1	3.2
STOP	0	1.5	0	1.5	0	1.2	1.3	0	3.2	0	0	0	0	0	0	0		0	3.1	3.1
Ref No.	IC3009																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PLAY	3.2	2.5	3.2	2.4	2.4	0	2.4	2.3	3.2	2.3	2.5	0	2.4	3.2	2.0	3.1	3.0	3.0	2.8	1.6
STOP	3.2	2.7	3.2	3.0	3.0	0	2.9	3.1	3.2	3.0	2.9	0	2.8	3.2	2.6	3.1	3.1	3.1	3.0	1.9
Ref No.	IC3009																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
PLAY	1.6	0	0.3	0.4	0.4	1.8	3.2	0	1.3	1.7	1.7	1.5	0	0	0	0	3.2	1.5	1.9	0
STOP	1.5	0	0	0.1	0.1	1.3	3.2	0	1.5	1.5	1.5	1.4	0	0	0	0	3.2	1.5	2.6	0
Ref No.	IC3009																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54						
PLAY	0	2.4	3.2	2.4	2.5	0	2.5	2.7	3.2	2.7	2.8	0	2.3	0						
STOP	0	2.8	3.2	3.0	2.9	0	2.9	3.0	3.2	2.9	2.8	0	2.9	0						
Ref No.	IC3201																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PLAY	4.9	0	0	0	0	0.2	0	0.5	2.2	0	1.6	0	2.1	3.3	2.1	4.9	2.2	2.2	0	2.2
STOP	4.9	0	0	0	0	0.1	0	0.5	2.1	0	1.5	0	2.1	3.3	2.1	4.9	2.2	2.2	0	2.2
Ref No.	IC3201																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32								
PLAY	2.2	0	1.6	1.6	0	4.5	0	0	4.4	0	0	-0.2								
STOP	2.2	0	1.3	1.3	0	4.4	0	0	4.4	4.4	0	-0.3								
Ref No.	IC4001																			
MODE	1	2	3	4	5															
PLAY	5.4	0	5.4	0	5.0															
STOP	5.4	0	5.4	0	5.0															
Ref No.	IC4003																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
PLAY	0	3.2	2.8	3.2	1.6	0.8	1.6	1.6	0	0	5.0	0	2.5	2.4	2.5	0				
STOP	0	3.2	2.8	3.2	1.6	0	1.6	1.6	0	0	5.0	0	2.5	2.4	2.5	5.0				</

RefNo.	IC4008									IC5201													
MODE	21	22	23	24	25	26	27	28		1	2	3	4	5	6	7	8						
PLAY	0	1.4	0	1.6	1.6	1.6	3.2	1.6		0	0	0	0	3.2	0	0.2	3.2						
STOP	0	1.4	0	1.6	1.6	1.6	3.2	1.6		0	0	0	0	0	0	0	3.2						
RefNo.	IC6001																						
MODE	1	2	3	4																			
PLAY	3.3	1.8	0	0																			
STOP	3.3	1.9	0	0																			
RefNo.	IC6002																						
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
PLAY	0	3.3	0.3	2.9	3.3	3.3	3.3	0	3.3	3.3	3.3	1.7	1.5	0	0	3.3	0	3.3	0	0			
STOP	0	3.3	0.2	2.9	3.3	3.3	3.3	0	3.3	3.3	3.3	1.7	1.5	0	0	3.3	0	3.3	0	0			
RefNo.	IC6002																						
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40			
PLAY	0	0.1	0.1	0	0.3	0.7	3.3	3.3	0	0	3.2	3.3	3.3	2.9	0	0	0	0	3.0	2.6			
STOP	0	0	0	0	0.2	0.7	3.3	3.3	0	0	3.2	3.3	3.3	2.9	0	0	0	0	3.0	2.7			
RefNo.	IC6002																						
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60			
PLAY	2.9	3.3	3.3	3.3	0.1	3.3	2.7	3.3	3.3	0	0	3.3	3.3	0	3.3	3.3	0.4	0	0	0			
STOP	2.9	3.3	3.3	3.3	0.1	3.3	2.7	3.3	3.3	0	0	3.3	3.3	0	3.3	3.3	0.3	0	0	0			
RefNo.	IC6002																						
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80			
PLAY	3.3	0	0	0	3.3	3.3	3.3	3.3	3.3	0	3.3	3.3	3.3	0	3.3	0	0	0	3.3	3.3			
STOP	3.3	0	0	0	3.3	3.3	3.3	3.3	3.3	0	3.3	3.3	3.3	0	3.3	0	0	0	3.3	3.3			
RefNo.	IC6003									IC6007													
MODE	1	2	3	4	5			1	2	3	4												
PLAY	0.7	0.7	0	0.6	3.2			3.3	3.3	0.2	0												
STOP	0.7	0.7	0	0.6	3.2			3.3	3.3	0	0												
RefNo.	IC8001																						
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
PLAY	0	0	0	2.0	5.0	3.4	3.4	3.4	0	0	0	0	3.8	2.5	2.5	2.5	2.5	7.5	2.5	2.5			
STOP	0	0	0	2.0	5.0	3.4	3.4	3.4	0	0	0	0	3.8	2.5	2.5	2.5	2.5	7.5	2.5	2.5			
RefNo.	IC8001																						
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40			
PLAY	2.5	0	1.4	1.5	1.5	0	0.3	0	0.3	0.3	0.1	0	3.3	3.3	0	1.8	2.6	5.0	0	3.3			
STOP	2.5	0	1.5	1.6	1.6	0	0.2	0	0.5	0.2	0.4	0	3.3	3.3	0	1.8	2.6	5.0	0	3.3			
RefNo.	IC8001																						
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60			
PLAY	2.9	0.3	0	3.3	1.6	3.3	0.3	3.7	3.3	3.2	3.2	3.0	2.3	2.7	0.1	5.0	3.6	2.5	0.2	2.9			
STOP	2.9	0.2	0	3.3	1.6	3.3	0.3	3.4	3.3	3.2	3.2	2.8	2.2	2.7	0	5.0	3.6	2.5	0.2	2.9			
RefNo.	IC8001				IC8202																		
MODE	61	62	63	64		1	2	3	4	5	6	7	8										
PLAY	0	2.5	2.0	2.0		2.9	0	0	0	3.3	3.2	0.4	3.3										
STOP	0	2.5	2.0	2.0		2.9	0	0	0	3.3	3.2	0.4	3.3										
RefNo.	IC8401									IC8403													
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8						
PLAY	0	0	0	0	3.3	3.3	0	3.3		-2.5	-2.5	-2.5	-12.4	1.6	1.6	1.4	7.5						
STOP	0	0	0	0	3.3	3.3	0	3.3		-2.5	-2.5	-2.5	-12.4	1.6	1.6	1.4	7.5						
RefNo.	IC8602																						
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14									
PLAY	1.5	1.5	1.2	1.5	1.5	1.3	0	1.2	1.5	1.5	3.3	3.3	3.3	3.3									
STOP	1.6	1.6	1.4	1.6	1.6	1.3	0	1.3	1.5	1.5	3.3	3.3	3.3	3.3									
RefNo.	IC8801							IC8802															
MODE	1	2	3	4	5			1	2	3													
PLAY	5.4	0	3.3	0	5.0			3.3	5.0	0													
STOP	5.4	0	3.3	0	5.0			3.3	5.0	0													

RefNo.	Q1001							Q1002							Q1003					
MODE	1	2	3	4	5	6		1	2	3	4	5	6		1	2	3	4	5	6
PLAY	1.2	1.2	8.2	9.0	1.2	1.2		2.6	2.6	6.2	9.0	2.5	2.5		5.6	5.6	3.3	9.0	5.6	5.6
STOP	1.2	1.2	8.1	9.0	1.2	1.2		2.5	2.5	6.2	9.0	2.5	2.5		5.5	5.5	3.3	9.0	5.5	5.5
RefNo.	Q1101							Q1401							Q1402					
MODE	E	C	B		1	2	3	4	5	6		1	2	3	4	5	6	7	8	
PLAY	0	10.6	0.2		3.7	3.7	9.9	11.0	3.7	3.7		11.8	11.8	11.8	8.0	8.8	8.8	8.8	8.8	
STOP	0	11.0	0.2		4.0	4.0	8.9	10.8	4.0	4.0		11.8	11.8	11.8	8.0	8.6	8.6	8.6	8.6	
RefNo.	Q1412				Q1622				Q1623				Q4001				Q4002			
MODE	E	C	B		S	D	G		E	C	B		E	C	B		E	C	B	
PLAY	11.6	11.6	10.9		0	0	4.9		9.3	4.9	8.8		8.3	9.0	9.0		0	3.1	0	
STOP	11.5	11.4	10.8		0	0	4.9		9.3	5.3	8.8		8.3	9.0	9.0		0	3.1	0	
RefNo.	Q5201				Q5202				Q5211				Q5215				Q8001			
MODE	E	C	B		E	C	B		E	C	B		E	C	B		E	C	B	
PLAY	0.4	3.8	1.0		0	5.0	0		4.4	2.2	3.8		5.0	0.1	5.0		0.8	0	0.1	
STOP	0	5.0	0		0	5.0	0		5.0	0.7	5.0		5.0	0	5.0		0.7	0	0	
RefNo.	Q8002							Q8201							Q8401					
MODE	1	2	3	4	5	6		1	2	3	4	5	6		1	2	3	4	5	6
PLAY	3.0	2.8	5.0	2.5	3.1	5.0		0.5	0.2	0.5	0.5	1.0	3.2		7.3	0.8	1.4	-12.3	1.9	1.4
STOP	2.8	2.8	5.0	2.2	2.8	5.0		0.5	0.2	0.5	0.5	1.0	3.2		7.3	0.8	1.4	-12.3	1.9	1.4
RefNo.	Q8406							QR1007				QR1008				QR1402				
MODE	1	2	3	4	5	6		E	C	B		E	C	B		E	C	B		
PLAY	7.5	1.4	1.9	-12.5	1.4	0.8		0	2.9	0		0	2.9	0.4		0	0	2.7		
STOP	7.5	1.4	1.9	-12.5	1.4	0.8		0	2.9	0		0	2.9	0.4		0	0	2.7		
RefNo.	QR1411							QR1413				QR1602				QR1603				
MODE	1	2	3	4	5	6		E	C	B		E	C	B		E	C	B		
PLAY	5.1	0.2	0.2	2.7	0	11.6		9.0	0	9.0		0	1.3	0		0	4.9	0		
STOP	5.1	0.2	0.1	2.7	0	11.5		9.0	0	9.0		0	1.3	0		0	4.9	0		

Ref No.	QR4001			QR4002			QR4004			QR4005								
MODE	E	C	B		E	C	B		E	C	B		E	C	B			
PLAY	0	0	3.3		9.0	9.0	7.7		2.9	-0.1	2.8		2.9	-0.1	2.8			
STOP	0	0	3.3		9.0	9.0	7.7		2.6	2.5	0		2.6	2.4	0.5			
Ref No.	QR4006						QR4009						QR4010					
MODE	1	2	3	4	5	6	1	2	3	4	5	6	E	C	B			
PLAY	0	-1.1	0	0	-1.5	0	0	-1.3	0	0	-1.3	0	3.2	-0.1	3.1			
STOP	0	-0.8	0	0	-0.1	0	0	0.6	0	0	0.6	0	3.2	-0.1	3.1			
Ref No.	QR4011			QR4013			QR4014			QR4015			QR4016					
MODE	E	C	B		E	C	B		E	C	B		E	C	B			
PLAY	0	0.1	3.1		0	0.8	0		0	-1.0	0		0	2.8	0		0	2.8
STOP	0	0.1	3.1		0	0	3.2		0	-0.6	0		0	0	0		0	0
Ref No.	QR4017			QR4018			QR4702											
MODE	E	C	B		E	C	B	1	2	3	4	5	6					
PLAY	0	2.2	0		0	0	2.7	0	-1.3	0	0	-5.2	0					
STOP	0	2.0	0		0	0	2.7	0	0.7	0	0	0.7	0					
Ref No.	QR4703						QR5221											
MODE	1	2	3	4	5	6	E	C	B									
PLAY	0	-1.6	0	0	-5.2	0	3.2	3.2	0.1									
STOP	0	0.7	0	0	0.7	0	3.2	-0.1	3.2									

13.2. INVERTER P.C.B.

Ref No.	IC1901																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PLAY	3.3	1.5	1.2	1.7	0.1	1.6	0.1	1.1	1.3	0.5	4.9	2.3	1.6	2.8	0.1	1.6	1.7	-	-	8.7
STOP	3.3	1.5	1.2	1.7	0.1	1.6	0.1	1.1	1.3	0.5	4.9	2.3	1.6	2.8	0.1	1.6	1.7	-	-	8.7

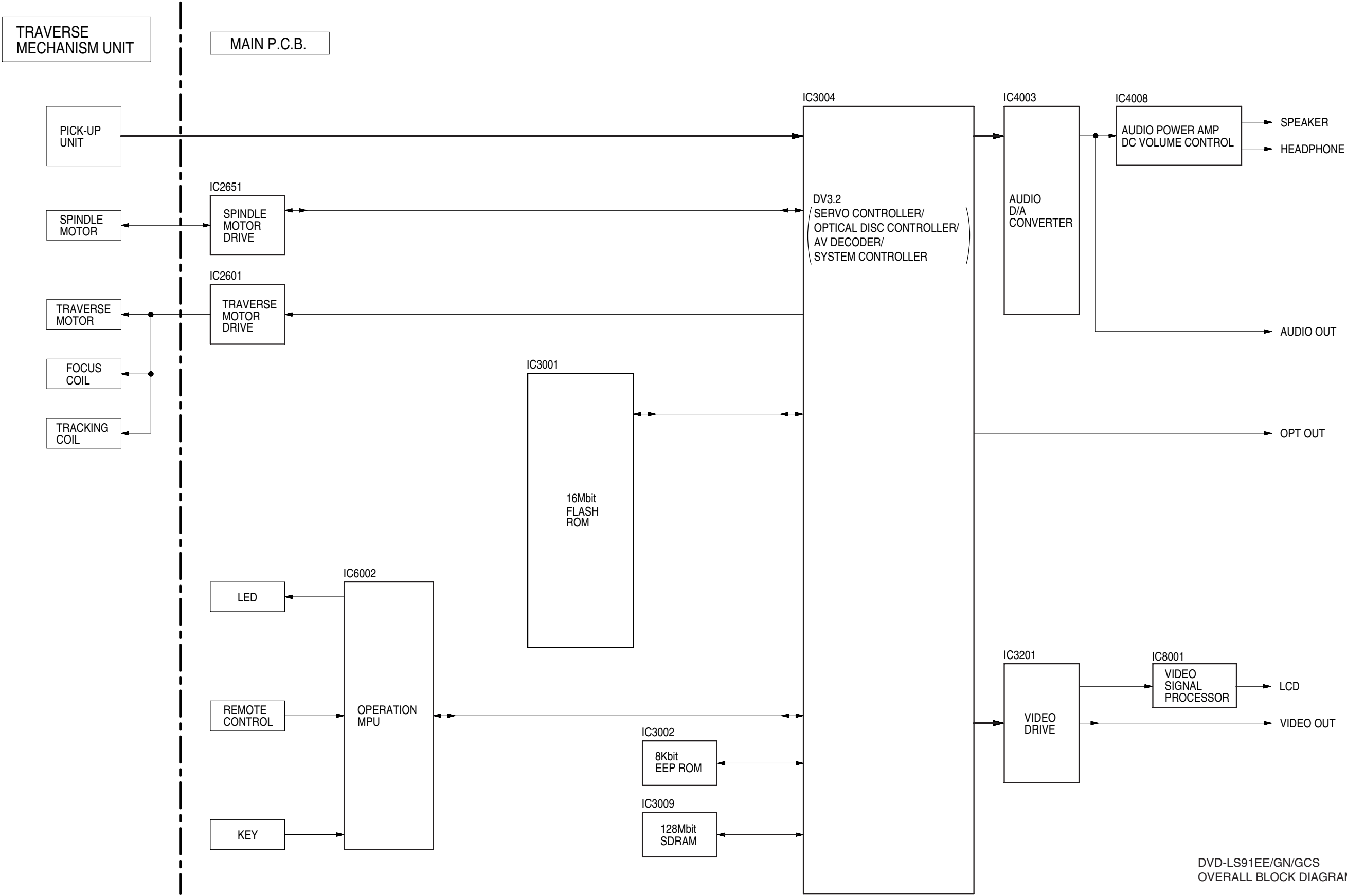
Ref No.	Q1901																			
MODE	1	2	3	4	5	6	7	8												
PLAY	0.1	1.7	0.1	1.6	9.9	9.8	9.4	9.4												
STOP	0.1	1.7	0.1	1.6	9.9	9.8	9.4	9.4												

14 BLOCK DIAGRAM

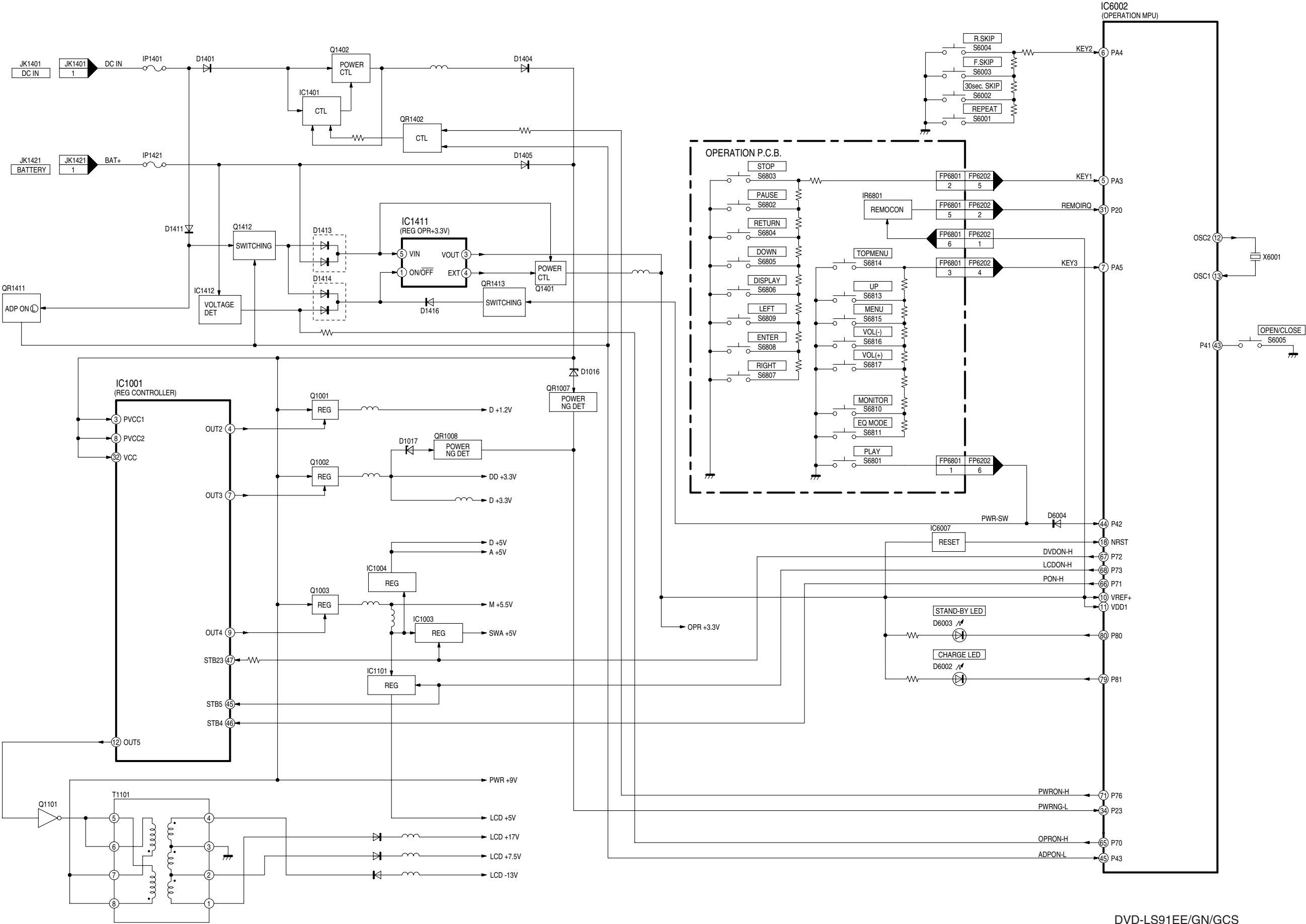
NOTE

Circuit voltage and waveform described herein shall be regarded as reference information when probing defect point, because it may differ from an actual measuring value due to difference of Measuring instrument and its measuring condition and product itself.

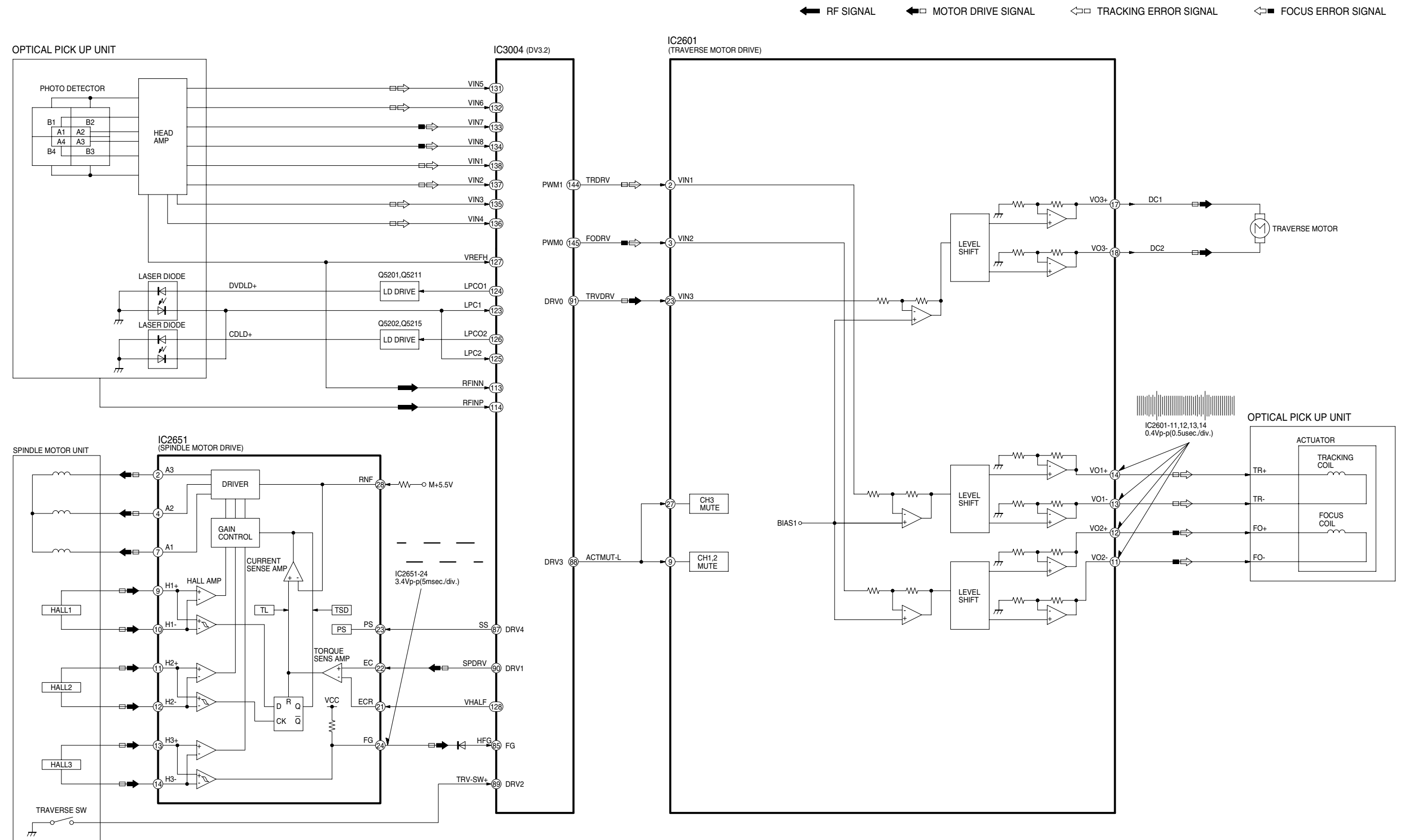
14.1. OVERALL BLOCK DIAGRAM



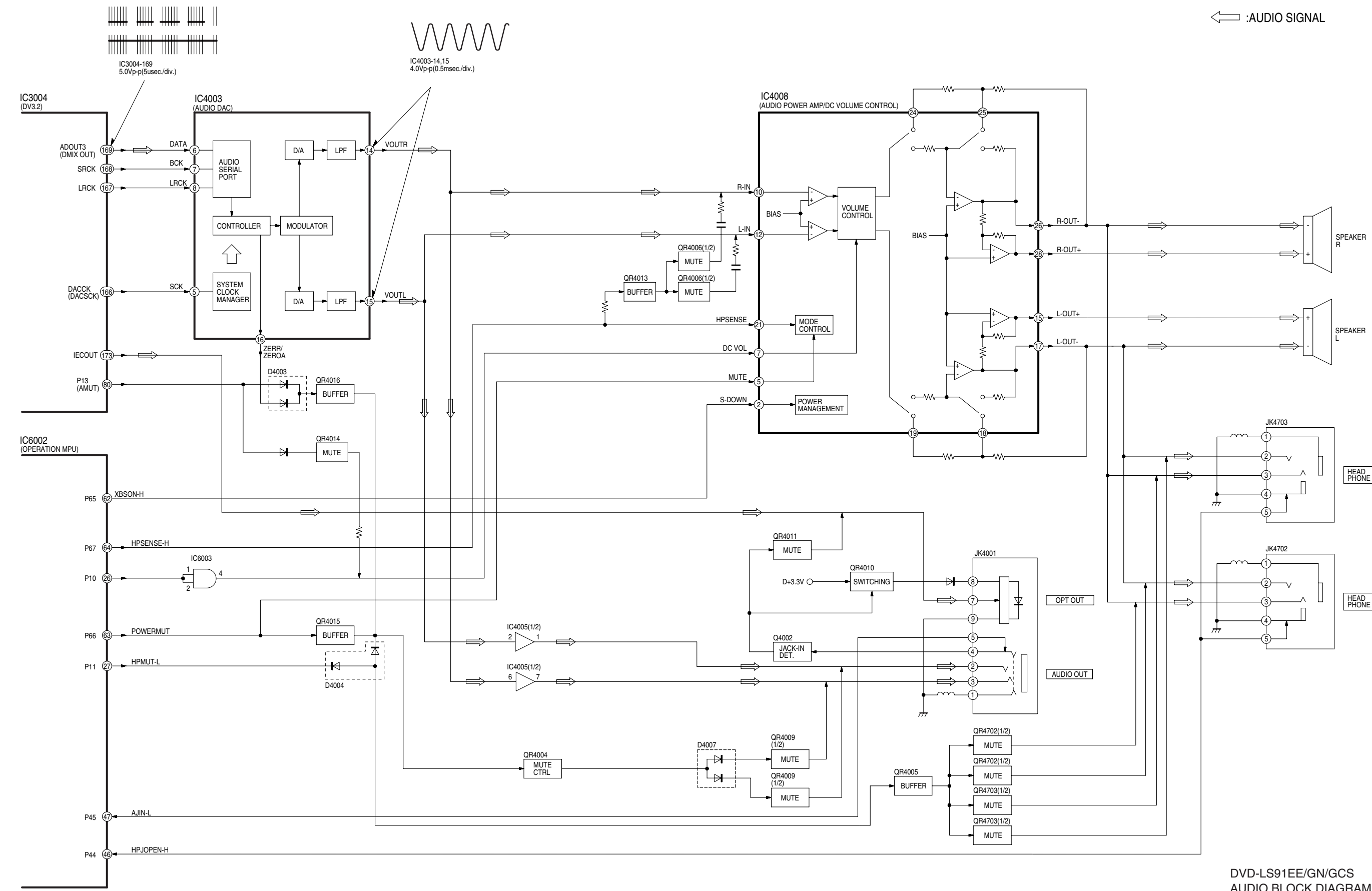
14.2. POWER SUPPLY BLOCK DIAGRAM



14.3. SERVO BLOCK DIAGRAM

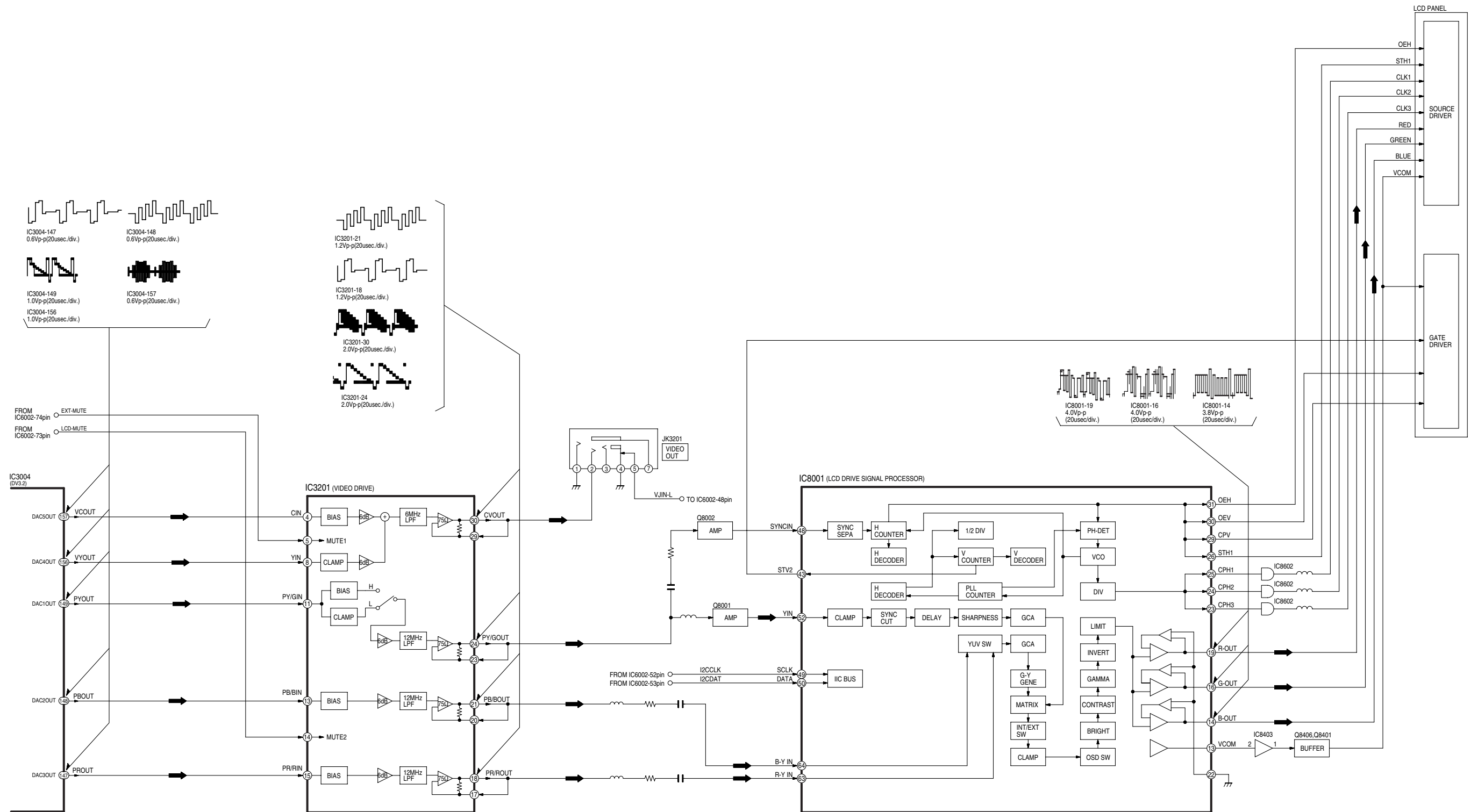


14.4. AUDIO BLOCK DIAGRAM



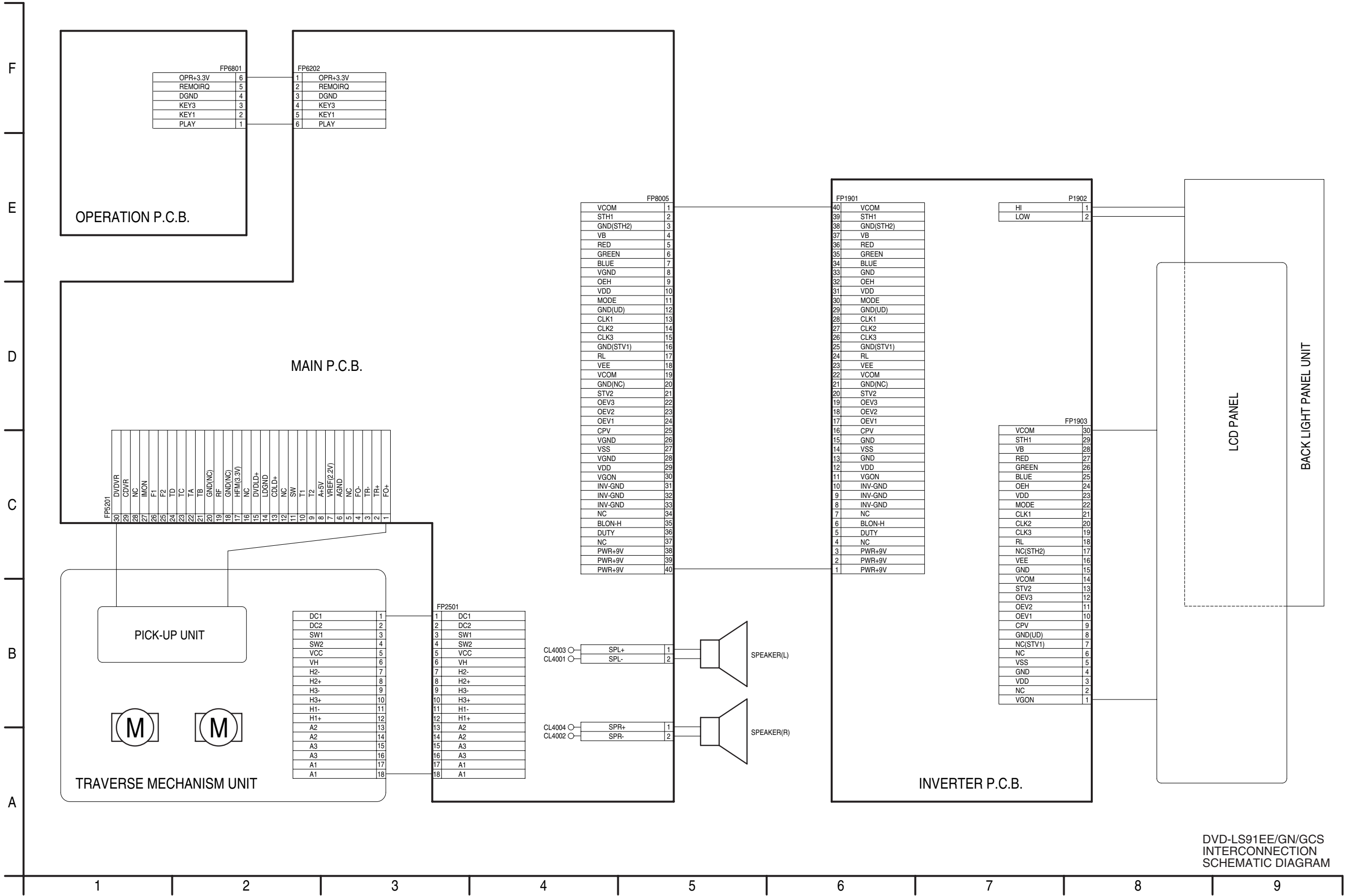
DVD-LS91EE/GN/GCS
AUDIO BLOCK DIAGRAM

14.5. VIDEO BLOCK DIAGRAM

 :VIDEO SIGNAL
DVD-LS91EE/GN/GCS
VIDEO BLOCK DIAGRAM

15 INTERCONNECTION SCHEMATIC DIAGRAM & SCHEMATIC DIAGRAM NOTES

15.1. INTERCONNECTION SCHEMATIC DIAGRAM



DVD-LS91EE/GN/GCS
INTERCONNECTION
SCHEMATIC DIAGRAM

15.2. SCHEMATIC DIAGRAM NOTES

This schematic diagram may be modified at any time with the development of new technology.

Important safety notice:

Components identified by ⚠ mark have special characteristics important for safety.

Furthermore, special parts which have purpose of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacture’s specified parts shown in the parts list.

Important safety notice:

There are special components used in this equipment which are important for safety.

These parts are marked by ⚠ in the schematic diagrams. It is essential that these critical parts should be replaced with manufacturer’s specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

Caution!

IC and LSI are sensitive to static electricity.

Secondary trouble can be prevented by taking care during repair.

Cover the parts boxes made of plastics with aluminum foil.

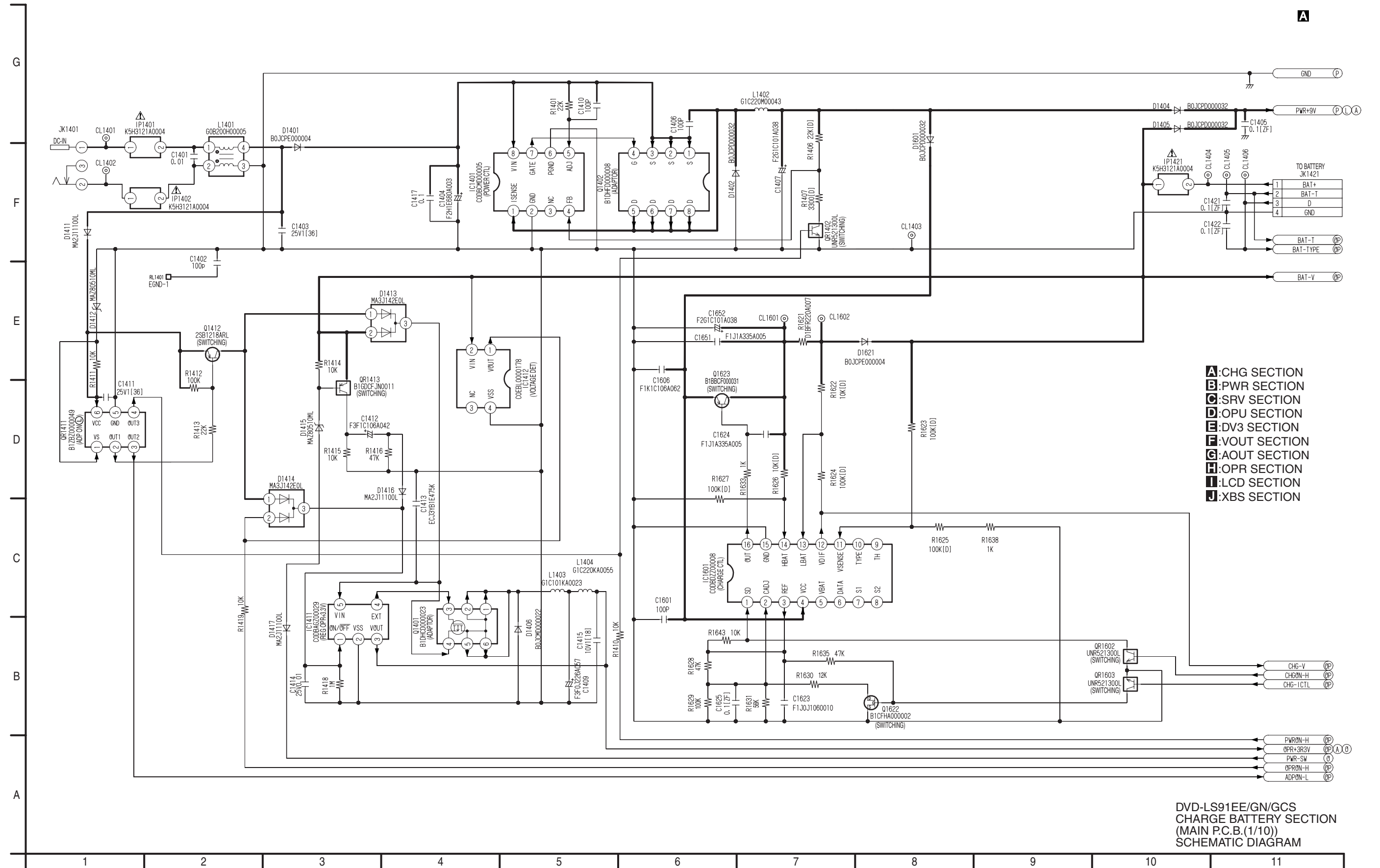
Ground the soldering iron.

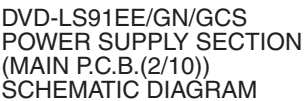
Put a conductive mat on the work table.

Do not touch the legs of IC or LSI with the fingers directly.

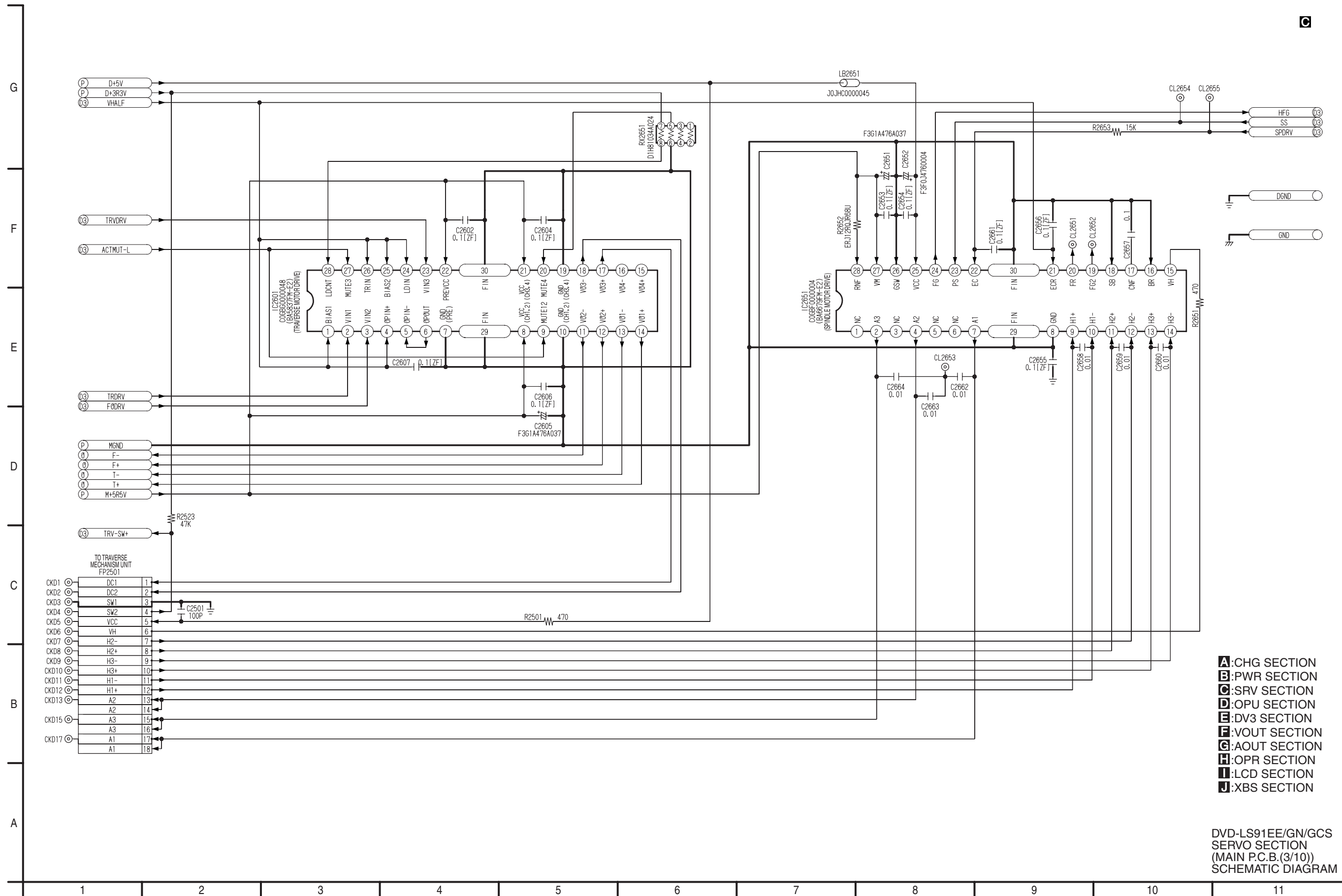
16 SCHEMATIC DIAGRAM

16.1. CHARGE BATTERY SECTION (MAIN P.C.B. (1/10)) SCHEMATIC DIAGRAM



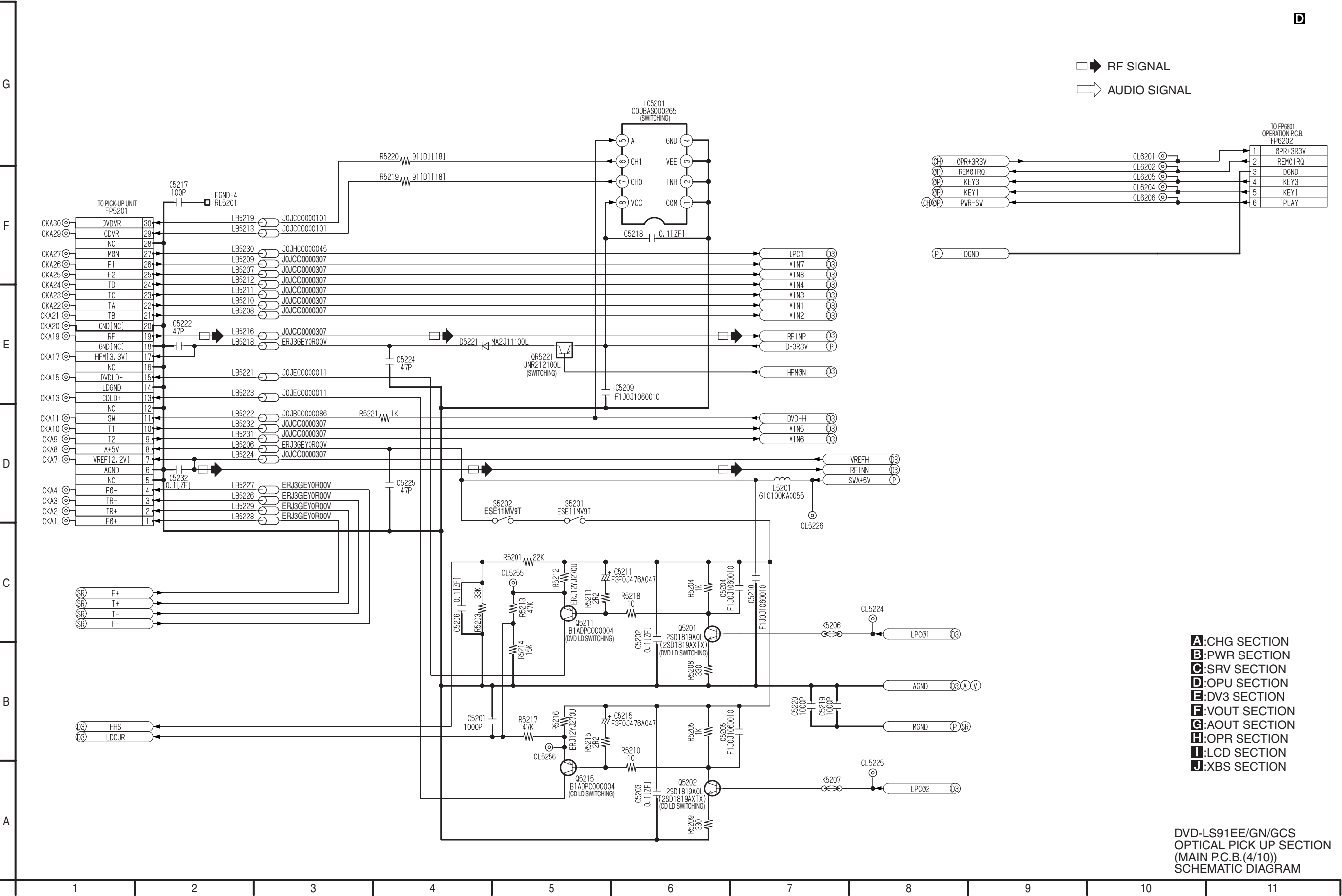


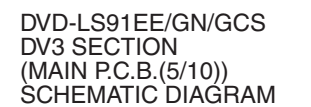
16.3. SERVO SECTION (MAIN P.C.B. (3/10)) SCHEMATIC DIAGRAM



DVD-LS91EE/GN/GCS
SERVO SECTION
(MAIN P.C.B.(3/10))
SCHEMATIC DIAGRAM

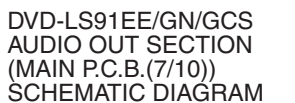
16.4. OPTICAL PICK UP SECTION (MAIN P.C.B. (4/10)) SCHEMATIC DIAGRAM

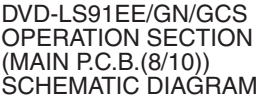


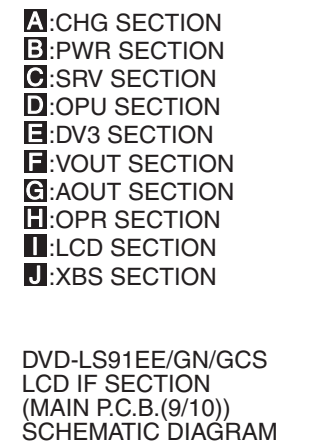


A:CHG SECTION
B:PWR SECTION
C:SRV SECTION
D:OPU SECTION
E:DV3 SECTION
F:VOUT SECTION
G:AOUT SECTION
H:OPR SECTION
I:LCD SECTION
J:XBS SECTION

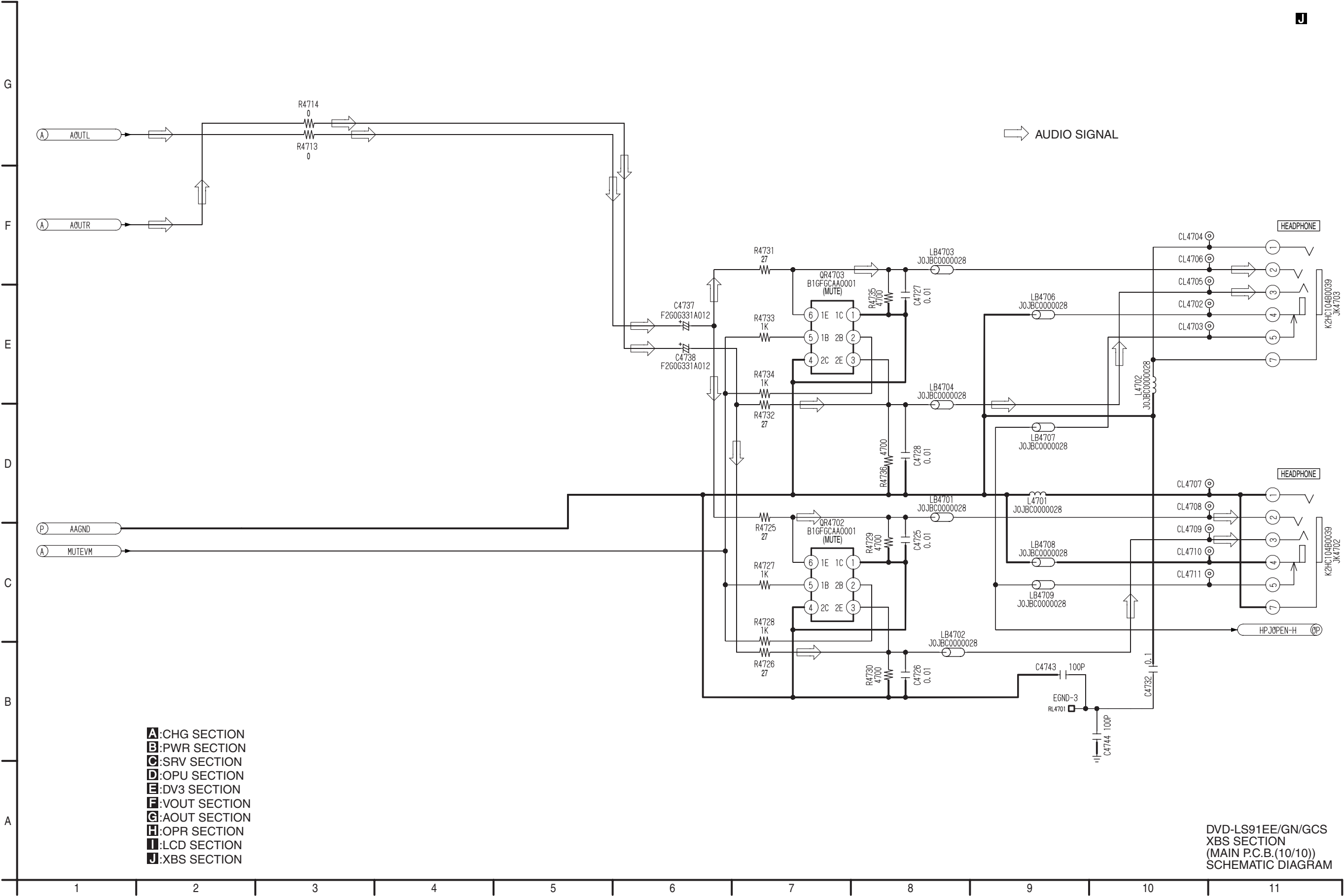
58



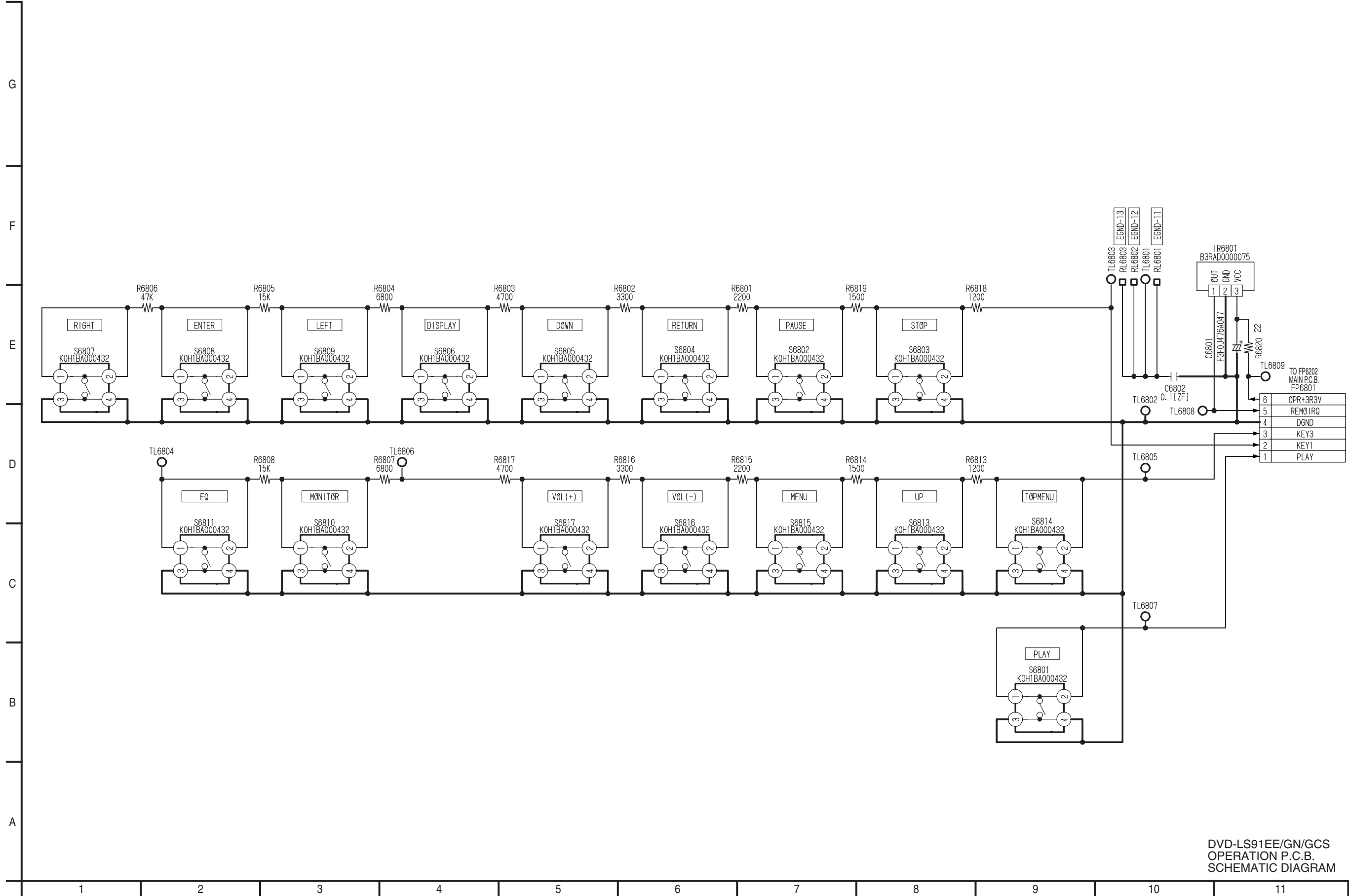




16.10. XBS SECTION (MAIN P.C.B. (10/10)) SCHEMATIC DIAGRAM

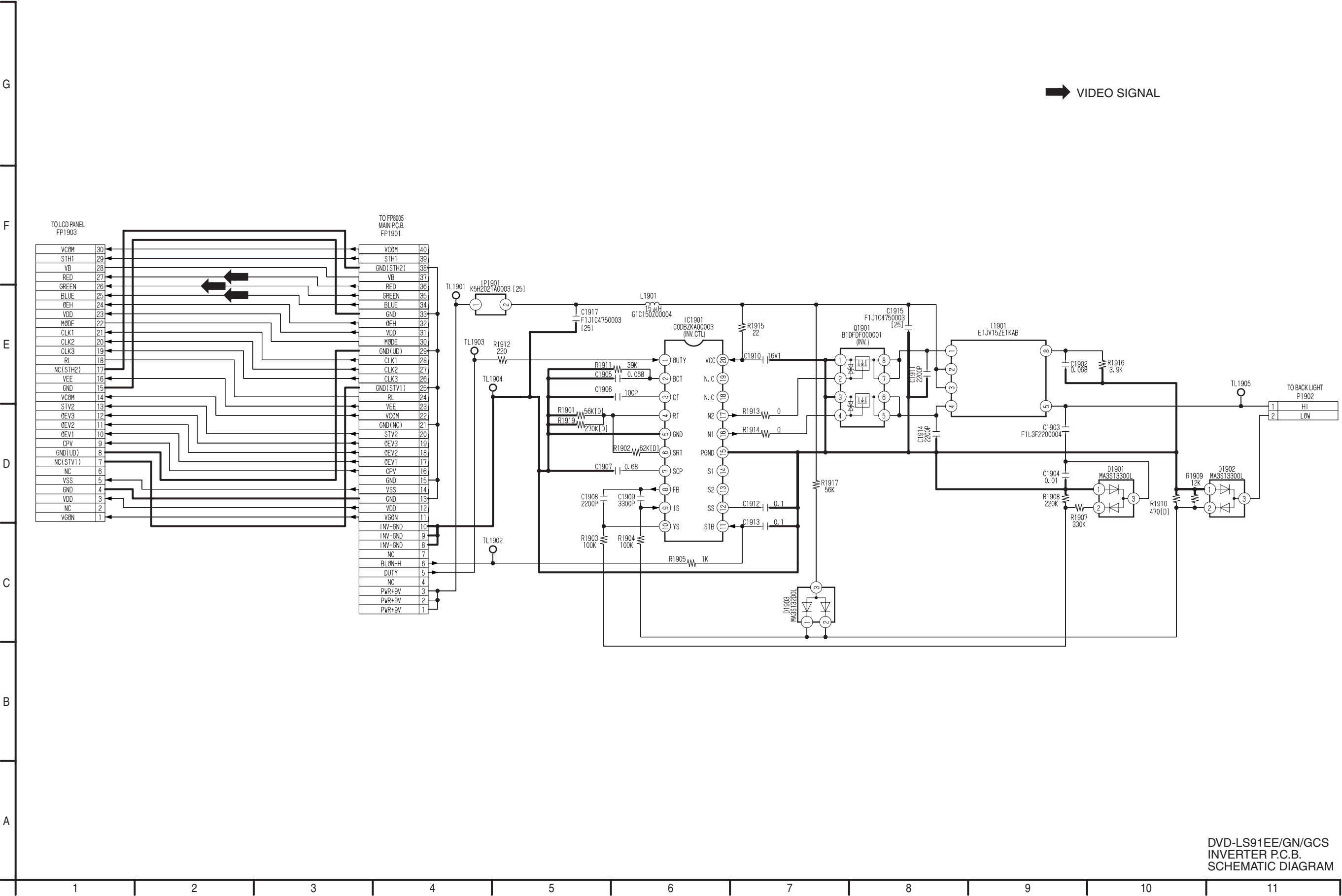


16.11. OPERATION SECTION (OPERATION P.C.B.) SCHEMATIC DIAGRAM



DVD-LS91EE/GN/GCS
OPERATION P.C.B.
SCHEMATIC DIAGRAM

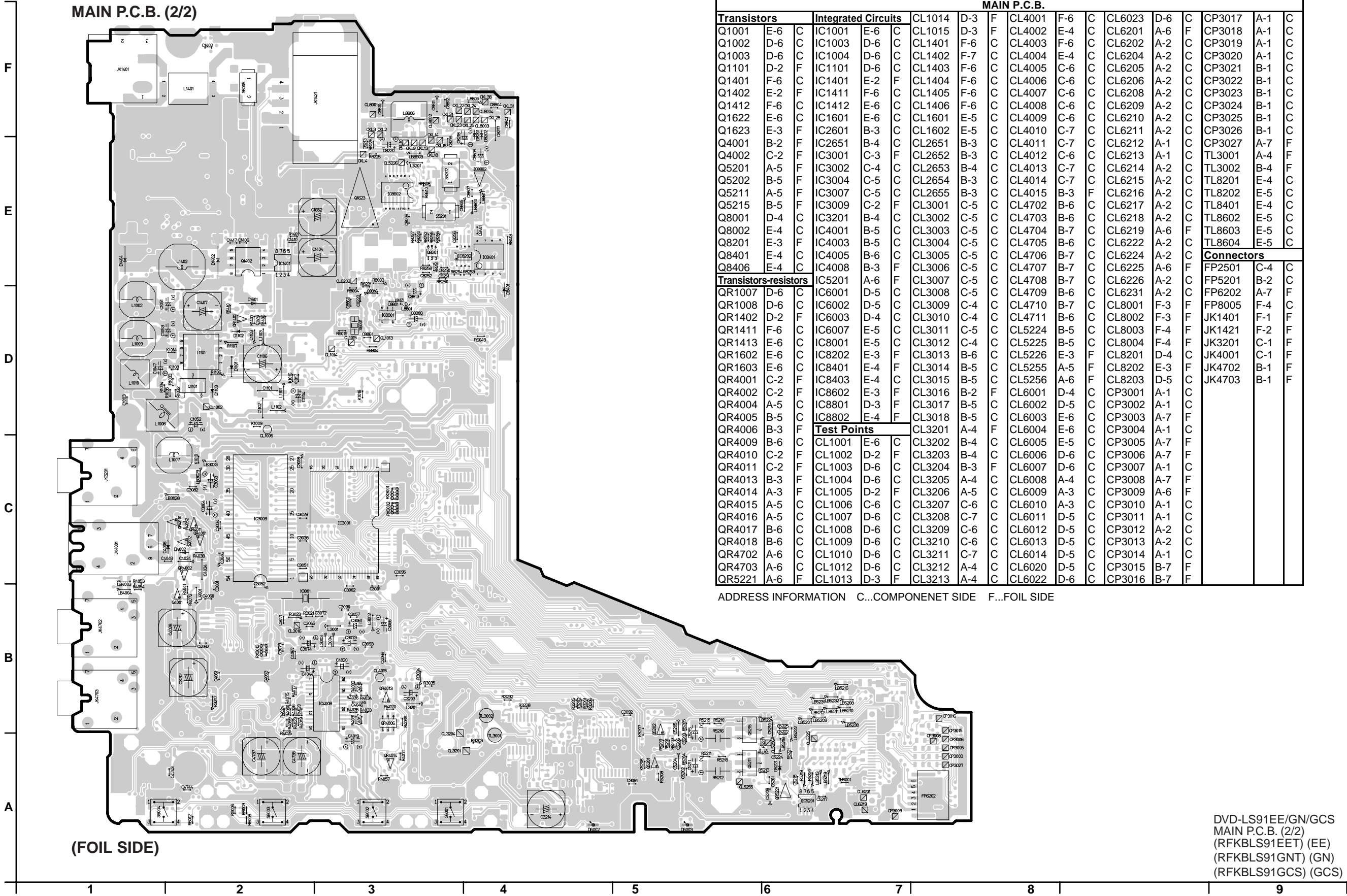
16.12. INVERTER SECTION SCHEMATIC DIAGARAM



DVD-LS91EE/GN/GCS
INVERTER P.C.B.
SCHEMATIC DIAGRAM



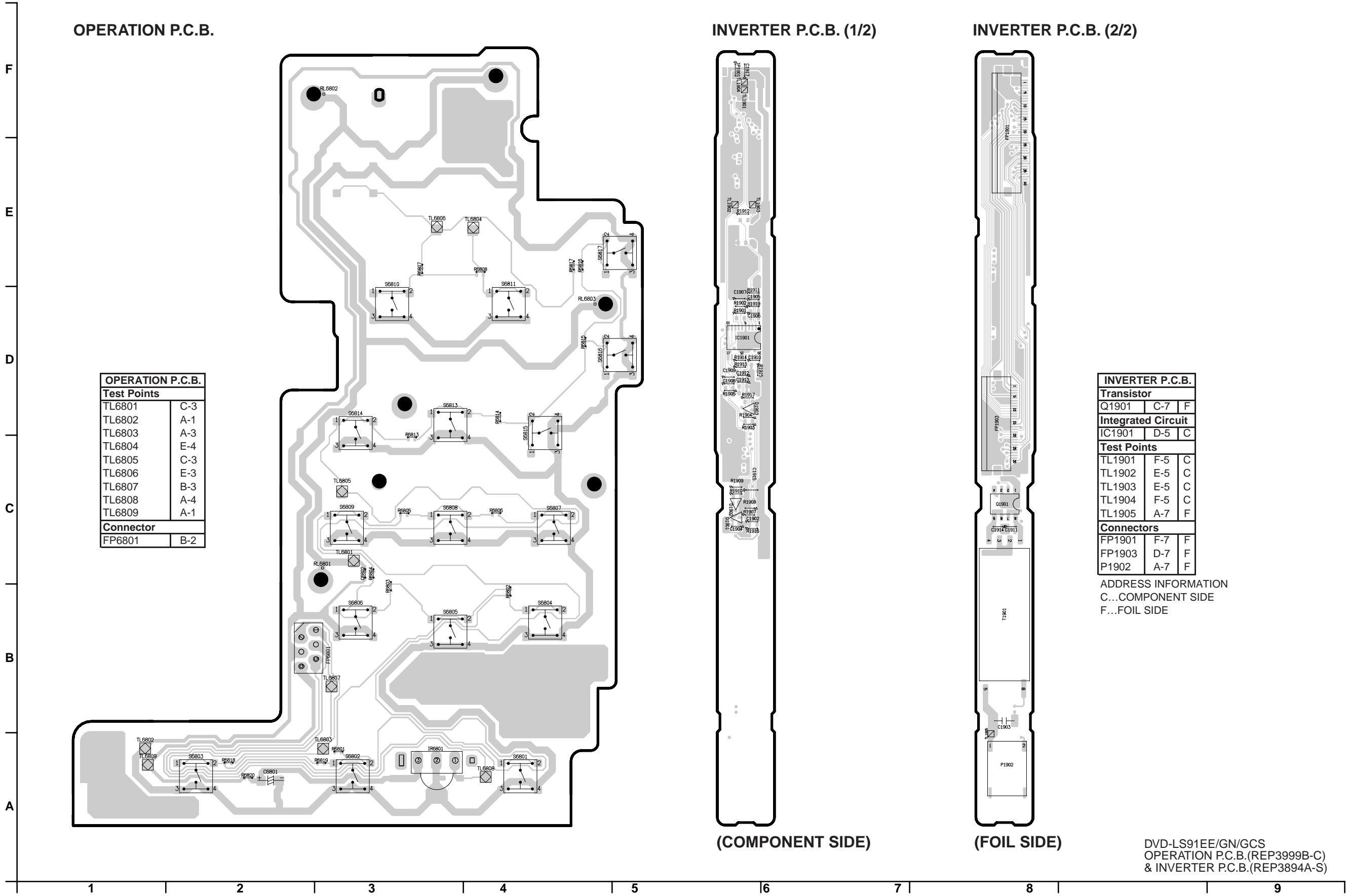
17.2. MAIN P.C.B. (2/2) (FOIL SIDE)



ADDRESS INFORMATION C...COMPONENT SIDE F...FOIL SIDE

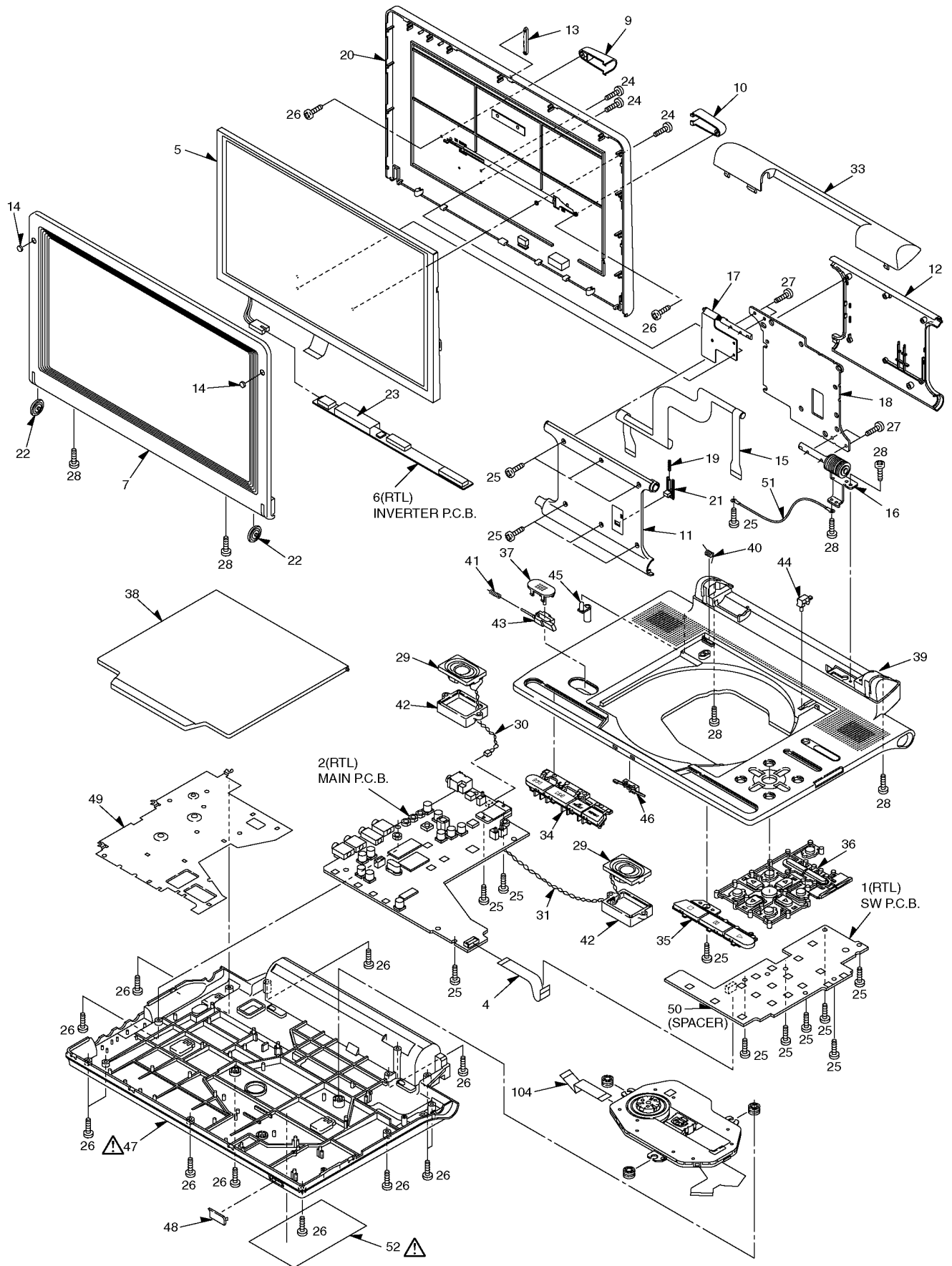
DVD-LS91EE/GN/GCS
MAIN P.C.B. (2/2)
(RFKBL91EET) (EE)
(RFKBL91GNT) (GN)
(RFKBL91GCS) (GCS)

17.3. OPERATION & INVERTER P.C.B.

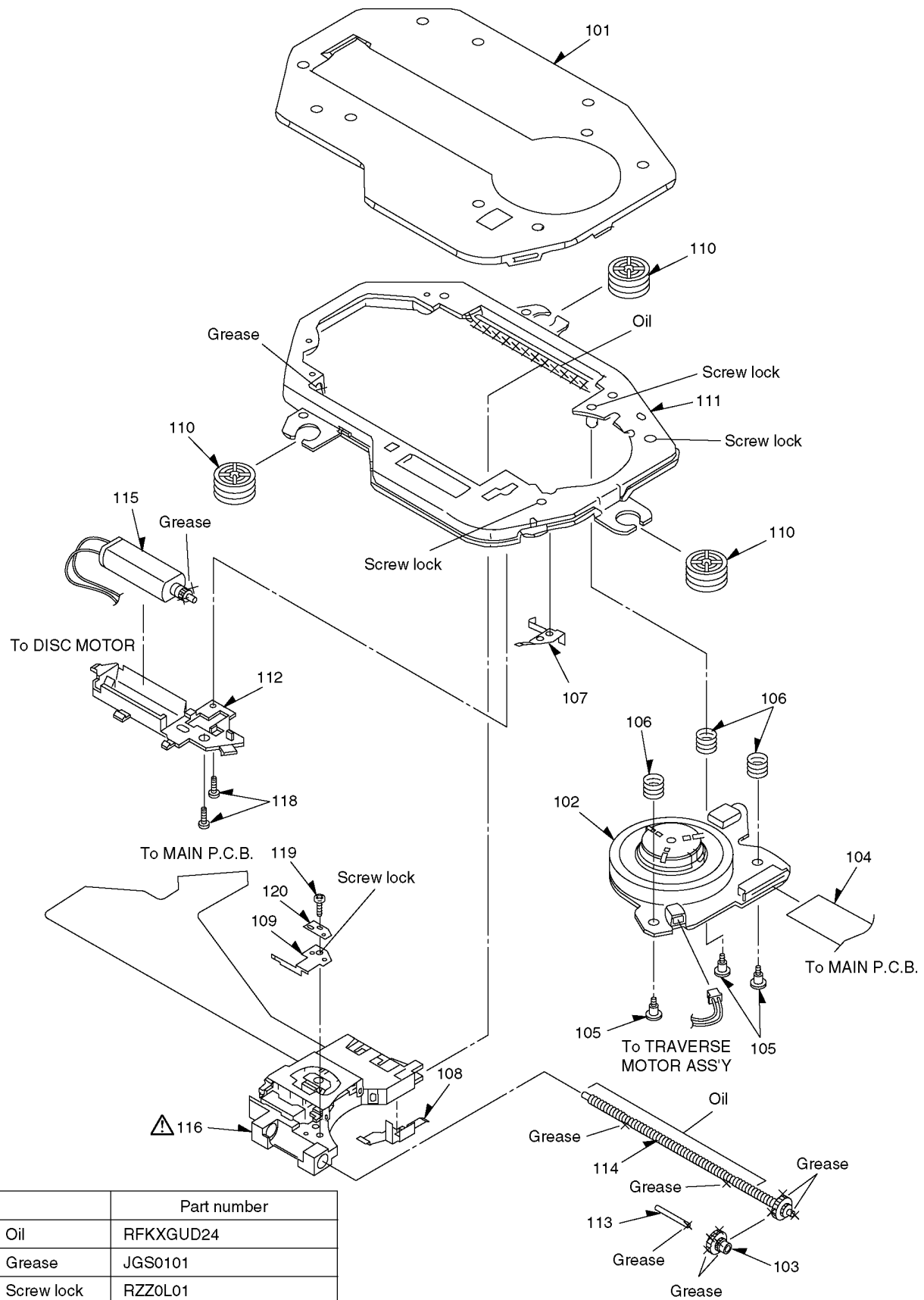


18 EXPLODED VIEWS

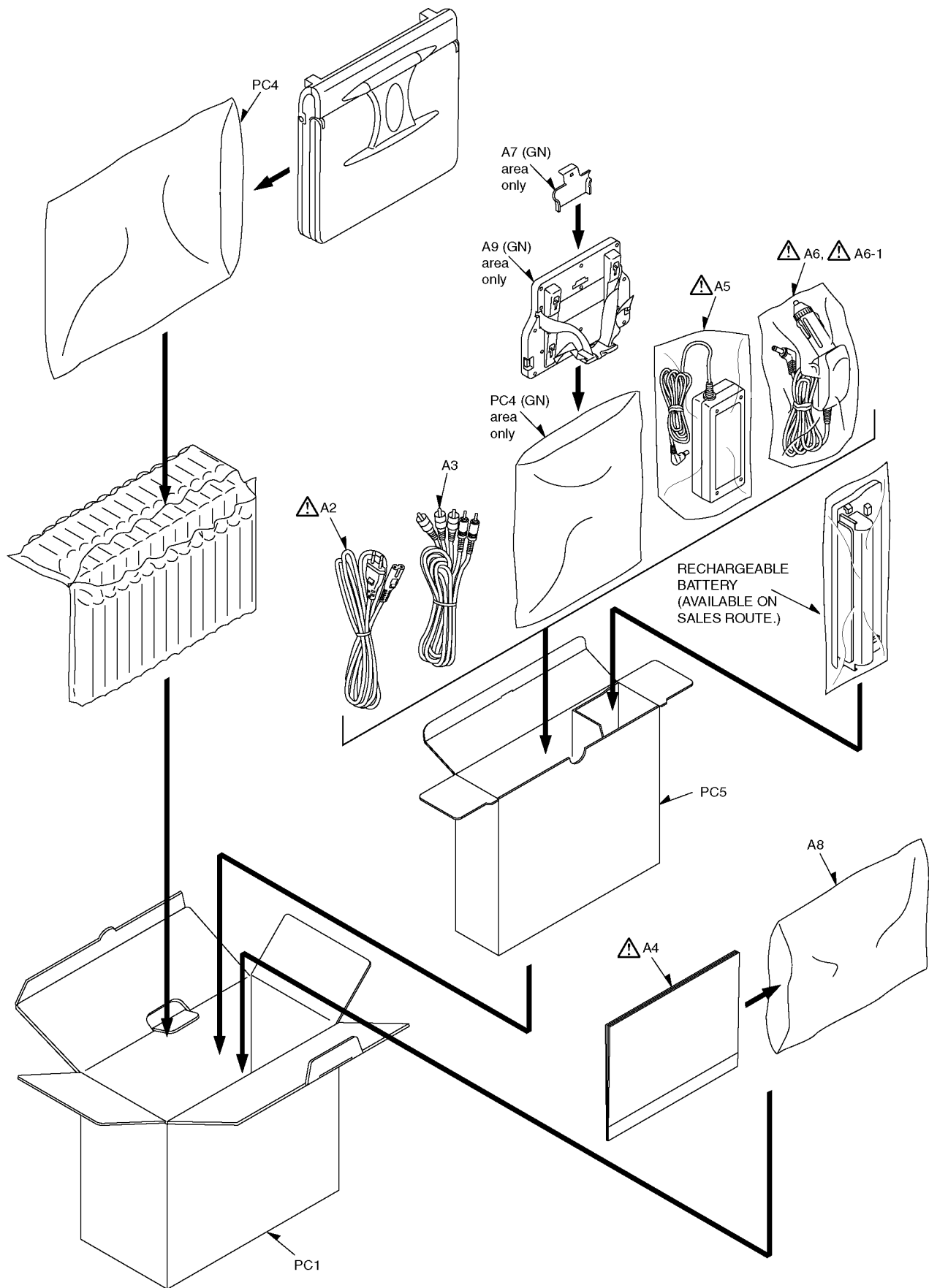
18.1. Casing Parts & Mechanism Section Exploded View



18.2. Mechanism Section Exploded View



18.3. Packing & Accessories Exploded View



19 REPLACEMENT PARTS LIST

Notes:

*Important safety notice:

Components identified by \triangle mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

*Warning: This product uses a laser diode. Refer to caution statements.

*Capacity values are in microfarads (μ F) unless specified otherwise, P=Pico-farads (pF), F=Farads (F).

*Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM).

*The marking (RTL) indicates the retention time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.

*(IA)-(IC), marks in Remarks indicate languages of instruction manuals. [(IA): English, (IB): Russian/ Ukrainian (IC): English]

*Parts indicated with (PAVC-CSG) in the Remarks column are supplied by PAVC (PAVC-CSG).

All other parts are supplied by PAVCSG (ASPC).

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	REP3999B-C	SW P.C.B.	1	(RTL)
2	RFBKLS91EET	MAIN P.C.B.	1	(RTL) EE
2	RFBKLS91GNT	MAIN P.C.B.	1	(RTL) GN
2	RFBKLS91GCS	MAIN P.C.B.	1	(RTL) GCS
4	REZ1698-1	FFC(6P)	1	
5	L5EDD2H00005	LCD PANEL	1	
6	REP3894A-S	INVERTER P.C.B.	1	(RTL)
7	RGP1319-1K	MONITOR CABINET ASS'Y	1	
9	RGQ0425-1S	SHAFT HOLDER (L)	1	
10	RGQ0426-1S	SHAFT HOLDER (R)	1	
11	RGQ0427-1S	MONO ARM	1	
12	RGQ0428-1S	MONO ARM COVER	1	
13	RGQ0429-1H	MONITOR CUSHION	1	
14	RGQ0431-K	CUSHION	2	
15	RJB3046A-1	MONO ARM FPC	1	
16	RKC0023-1	FRICTION HINGE(A)	1	
17	RKC0024	FRICTION HINGE(B)	1	
18	RMA1928	HINGE PLATE	1	
19	RMB0835	LOCK LEVER SPRING	1	
20	RFBKPDLS91AS	MONITOR COVER ASS'Y	1	
21	RML0700-1	LOCK LEVER	1	
22	RMR1705-H	ROLLER	2	
23	RMZ0780	INSULATION SHEET	1	
24	XQN17+B4FN	SCREW	3	
25	XQN17+BG4FNJ	SCREW	17	
26	XQN17+BG6FN	SCREW	15	
27	XQN2+B3FN	SCREW	4	
28	XTN17+6GFJK	SCREW	6	
29	EAS2D01T	SPEAKER	2	
30	REZ1786	SPEAKER (L) WIRE	1	
31	REZ1787	SPEAKER (R) WIRE	1	
33	RGQ0430-1S	HINGE COVER	1	
34	RGU2455A-K	MAIN BUTTON (L)	1	
35	RGU2456-K	MAIN BUTTON (R)	1	
36	RGU2457B-S	OPERATION BUTTON	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
37	RGU2458-S	OPEN BUTTON	1	
38	RKF0732A-1S1	DISC COVER	1	EE/GN
38	RKF0732-1S1	DISC COVER	1	GCS
39	RKM0553F-S1	MAIN CABINET	1	
40	RMB0833	OPEN SPRING	1	
41	RMB0834	OPEN BUTTON SPRING	1	
42	RMG0569-K1	SPEAKER RUBBER	2	
43	RML0699	LOCK LEVER	1	
44	RMR1703-H	STOPPER	1	
45	RMR1704-H	LCD OFF BUTTON	1	
46	RGL0685-W	LIGHTING PIECE	1	
47	RKS0424A-S	BOTTOM CABINET	1	\triangle
48	RKW0803-W	REMOTE SENSOR WINDOW	1	
49	RMY0354	HEAT SINK	1	
50	RMX0324	REMOTE SENSOR SPACER	1	
51	REZ1697	WIRE	1	
52	RGN2872A-W1	NAME LABEL	1	EE \triangle
52	RGN2872B-W	NAME LABEL	1	GCS \triangle
52	RGN2872E-W1	NAME LABEL	1	GN \triangle
101	RMK0503-C	COVER	1	
102	BKL2E08KA	DISC MOTOR	1	
103	RDG0514-C	INTERFACE GEAR	1	
104	REZ1740	SPINDLE FFC	1	
105	RHD17037-1	SCREW	3	
106	RMB0681-J	TILT SPRING	3	
107	RMC0448-C	SPRING	1	
108	RMC0592-C	SPRING	1	
109	RMC0455-3C	SPRING	1	
110	RMG0562-K	DAMPER	3	
111	RMK0502-5C	TRAVERSE BASE	1	
112	RMR1393-WC	MOTOR COVER	1	
113	RMS0751-J	INTERFACE GEAR SHAFT	1	
114	RXJ0031	DRIVE SHAFT ASS'Y	1	
115	RXQ0786-1	TRAVERSE MOTOR ASS'Y	1	
116	RAF3134A-2	OPTICAL PICK-UP	1	\triangle
118	XQN17+BG4FN	SCREW	2	
119	RHD17043-1	SCREW	1	
120	RMC0593-C	SUPPORT PLATE	1	
A2	K2CQ2CA00006	AC CORD	1	EE, GCS \triangle
A2	K2CJ2DA00008	AC CORD	1	GN \triangle
A3	K2KA6CB00003	AV CORD	1	
A4	RQT8250-R	OPERATING INSTRUCTIONS	1	EE (IA) \triangle
A4	RQT8248-B	OPERATING INSTRUCTIONS	1	GN (IB) \triangle
A4	RQT8717-L	OPERATING INSTRUCTIONS	1	GCS (IC) \triangle
A5	RFEA213W-5W	AC ADAPTOR	1	\triangle
A6	RFEC202M-M	CAR DC CABLE	1	\triangle
A6-1	K5D252APA008	FUSE	1	\triangle
A7	RGQ0442-K	MONITOR HOLDER	1	GN
A8	RPF0046-1	POLYETHYLENE BAG	1	
A9	RXQ1405A	BRACKET UNIT	1	GN
PC1	RPK2495	PACKING CASE	1	EE
PC1	RPK2428	PACKING CASE	1	GN
PC1	RPK2435	PACKING CASE	1	GCS
PC4	RPFC0031-B	POLYETHYLENE BAG	1	EE, GCS
PC4	RPFC0031-B	POLYETHYLENE BAG	2	GN
PC5	RPQF0277	ACCESSORY BOX	1	EE, GCS
PC5	RPQF0299	ACCESSORY BOX	1	GN
C1001	ECJ1VB1C105K	16V 1U	1	
C1002	ECJ1VB1C105K	16V 1U	1	
C1003	ECJ0EB1E102K	25V 1000P	1	
C1004	ECJ0EB1E102K	25V 1000P	1	
C1005	ECJ1VB1C105K	16V 1U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C1006	ECJ0EB1E102K	25V 1000P	1	
C1007	ECJ0EC1H101J	50V 100P	1	
C1015	ECJ1VB0J474K	6.3V 0.47U	1	
C1016	ECJ1VB1C105K	16V 1U	1	
C1017	F3F1A106A047	10V 10U	1	
C1018	ECJ0EC1H151J	50V 150P	1	
C1019	F3F1A106A047	10V 10U	1	
C1021	ECJ0EC1H151J	50V 150P	1	
C1022	ECJ0EB1E271K	25V 270P	1	
C1023	ECJ1VB0J474K	6.3V 0.47U	1	
C1025	ECJ0EB1C682K	16V 6800P	1	
C1026	ECJ0EB1E182K	25V 1800P	1	
C1027	ECJ0EB1E332K	25V 3300P	1	
C1031	ECJ1VB1C105K	16V 1U	1	
C1038	ECJ1VB1C105K	16V 1U	1	
C1044	ECJ1VB1C105K	16V 1U	1	
C1047	F3G1A476A037	10V 47U	1	
C1051	F3G1A476A037	10V 47U	1	
C1052	F3G1A476A037	10V 47U	1	
C1053	F3G1A476A037	10V 47U	1	
C1063	F1K1C106A062	16V 10U	1	
C1066	ECJ0EB1C103K	16V 0.01U	1	
C1067	ECJ0EF1C104Z	16V 0.1U	1	
C1068	ECJ0EF1C104Z	16V 0.1U	1	
C1069	ECJ1VB1C105K	16V 1U	1	
C1070	ECJ0EB1E102K	25V 1000P	1	
C1071	ECJ0EC1H101J	50V 100P	1	
C1072	ECJ0EB1E182K	25V 1800P	1	
C1073	F1H1A224A025	10V 0.22U	1	
C1074	ECJ1VB1C105K	16V 1U	1	
C1101	F1K1A1060017	10V 10U	1	
C1102	ECJ3YB1E105K	25V 1U	1	
C1103	ECJ1VB1C105K	16V 1U	1	
C1104	F3G1A476A037	10V 47U	1	
C1106	F2H1E680A003	25V 68U	1	
C1109	F1J0J1060010	6.3V 10U	1	
C1401	ECJ0EB1C103K	16V 0.01U	1	
C1402	ECJ0EC1H101J	50V 100P	1	
C1403	ECJ3YB1E105K	25V 1U	1	
C1404	F2H1E680A003	25V 68U	1	
C1405	ECJ0EF1C104Z	16V 0.1U	1	
C1406	ECJ0EC1H101J	50V 100P	1	
C1407	F2G1C101A038	16V 100U	1	
C1409	F3F0J226A057	6.3V 22U	1	
C1410	ECJ0EC1H101J	50V 100P	1	
C1411	ECJ3YB1E105K	25V 1U	1	
C1412	F3F1C106A042	16V 10U	1	
C1413	ECJ3YB1E475K	25V 4.7U	1	
C1414	ECJ0EB1E103K	25V 0.01U	1	
C1415	ECJ1VB1A105K	10V 1U	1	
C1417	ECJ0EB1A104K	10V 0.1U	1	
C1421	ECJ0EF1C104Z	16V 0.1U	1	
C1422	ECJ0EF1C104Z	16V 0.1U	1	
C1601	ECJ0EC1H101J	50V 100P	1	
C1606	F1K1C106A062	16V 10U	1	
C1623	F1J0J1060010	6.3V 10U	1	
C1624	F1J1A335A005	10V 3.3U	1	
C1625	ECJ0EF1C104Z	16V 0.1U	1	
C1651	F1J1A335A005	10V 3.3U	1	
C1652	F2G1C101A038	16V 100U	1	
C1902	ECJ1VB1C683K	16V 0.068U	1	
C1903	F1L3F2200004	22U	1	
C1904	ECJ1VB1H103K	50V 0.01U	1	
C1905	ECJ1VB1C683K	16V 0.068U	1	
C1906	F1H1H101A799	50V 100P	1	
C1907	ECJ1VB0J684K	6.3V 0.68U	1	
C1908	F1H1H222A798	50V 2200P	1	
C1909	F1H1H332A798	50V 3300P	1	
C1910	ECJ1VB1C105K	16V 1U	1	
C1911	F1H1H222A798	50V 2200P	1	
C1912	F1H1C104A065	16V 0.1U	1	
C1913	F1H1C104A065	16V 0.1U	1	
C1914	F1H1H222A798	50V 2200P	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C1915	F1J1C4750003	16V 4.7U	1	
C1917	F1J1C4750003	16V 4.7U	1	
C2501	ECJ0EC1H101J	50V 100P	1	
C2602	ECJ0EF1C104Z	16V 0.1U	1	
C2604	ECJ0EF1C104Z	16V 0.1U	1	
C2605	F3G1A476A037	10V 47U	1	
C2606	ECJ0EF1C104Z	16V 0.1U	1	
C2607	ECJ0EF1C104Z	16V 0.1U	1	
C2651	F3G1A476A037	10V 47U	1	
C2652	F3F0J4760004	6.3V 47U	1	
C2653	ECJ0EF1C104Z	16V 0.1U	1	
C2654	ECJ0EF1C104Z	16V 0.1U	1	
C2655	ECJ0EF1C104Z	16V 0.1U	1	
C2656	ECJ0EF1C104Z	16V 0.1U	1	
C2657	ECJ0EB1A104K	10V 0.1U	1	
C2658	ECJ0EB1C103K	16V 0.01U	1	
C2659	ECJ0EB1C103K	16V 0.01U	1	
C2660	ECJ0EB1C103K	16V 0.01U	1	
C2661	ECJ0EF1C104Z	16V 0.1U	1	
C2662	ECJ0EB1C103K	16V 0.01U	1	
C2663	ECJ0EB1C103K	16V 0.01U	1	
C2664	ECJ0EB1C103K	16V 0.01U	1	
C3001	ECJ0EF1C104Z	16V 0.1U	1	
C3002	ECJ0EF1C104Z	16V 0.1U	1	
C3004	ECJ0EF1C104Z	16V 0.1U	1	
C3006	ECJ0EF1C104Z	16V 0.1U	1	
C3007	ECJ0EF1C104Z	16V 0.1U	1	
C3008	ECJ0EF1C104Z	16V 0.1U	1	
C3009	ECJ0EF1C104Z	16V 0.1U	1	
C3010	ECJ0EF1C104Z	16V 0.1U	1	
C3011	ECJ0EF1C104Z	16V 0.1U	1	
C3012	ECJ0EF1C104Z	16V 0.1U	1	
C3015	ECJ0EF1C104Z	16V 0.1U	1	
C3016	ECJ0EF1C104Z	16V 0.1U	1	
C3018	ECJ1VB0J105K	6.3V 1U	1	
C3019	ECJ0EF1C104Z	16V 0.1U	1	
C3020	ECJ0EF1C104Z	16V 0.1U	1	
C3021	ECJ0EF1C104Z	16V 0.1U	1	
C3022	ECJ0EB1C153K	16V 0.015U	1	
C3024	ECJ0EF1C104Z	16V 0.1U	1	
C3025	ECJ0EF1C104Z	16V 0.1U	1	
C3026	ECJ0EF1C104Z	16V 0.1U	1	
C3027	ECJ0EF1C104Z	16V 0.1U	1	
C3028	ECJ0EB1A333K	10V 0.033U	1	
C3029	ECJ0EC1H221J	50V 220P	1	
C3030	ECJ0EF1C104Z	16V 0.1U	1	
C3031	ECJ0EF1C104Z	16V 0.1U	1	
C3032	ECJ0EF1C104Z	16V 0.1U	1	
C3033	ECJ0EB1C562K	16V 5600P	1	
C3034	ECJ0EB1E222K	25V 2200P	1	
C3035	ECJ0EB1C183K	16V 0.018U	1	
C3036	ECJ0EF1C104Z	16V 0.1U	1	
C3037	ECJ1VB0J105K	6.3V 1U	1	
C3038	ECJ0EF1C104Z	16V 0.1U	1	
C3039	ECJ1VB0J105K	6.3V 1U	1	
C3040	ECJ0EB1A104K	10V 0.1U	1	
C3041	ECJ0EB1A104K	10V 0.1U	1	
C3042	ECJ0EF1C104Z	16V 0.1U	1	
C3043	ECJ0EB1A104K	10V 0.1U	1	
C3044	ECJ0EB1A104K	10V 0.1U	1	
C3045	ECJ0EF1C104Z	16V 0.1U	1	
C3046	ECJ1VB0J105K	6.3V 1U	1	
C3047	ECJ0EB1A104K	10V 0.1U	1	
C3048	ECJ0EB1A104K	10V 0.1U	1	
C3049	ECJ0EB1A104K	10V 0.1U	1	
C3050	ECJ0EF1C104Z	16V 0.1U	1	
C3051	ECJ0EB1A104K	10V 0.1U	1	
C3052	ECJ1VB0J105K	6.3V 1U	1	
C3053	ECJ1VB0J105K	6.3V 1U	1	
C3054	ECJ1VB0J105K	6.3V 1U	1	
C3055	ECJ1VB0J105K	6.3V 1U	1	
C3056	ECJ1VB0J105K	6.3V 1U	1	
C3057	ECJ0EB1A104K	10V 0.1U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C3058	ECJ0EF1C104Z	16V 0.1U	1	
C3059	ECJ0EF1C104Z	16V 0.1U	1	
C3060	ECJ1VB0J105K	6.3V 1U	1	
C3061	F3F0J476A047	6.3V 47U	1	
C3062	ECJ1VB0J105K	6.3V 1U	1	
C3063	F3F0J476A047	6.3V 47U	1	
C3064	F3F0J476A047	6.3V 47U	1	
C3065	ECJ0EB1A104K	10V 0.1U	1	
C3066	F3F0J476A047	6.3V 47U	1	
C3067	ECJ1VB0J105K	6.3V 1U	1	
C3069	ECJ1VB0J105K	6.3V 1U	1	
C3070	ECJ1VB0J105K	6.3V 1U	1	
C3071	ECJ0EC1H120J	50V 12P	1	
C3072	ECJ0EC1H270J		1	
C3073	F3F0J476A047	6.3V 47U	1	
C3074	F3F0J476A047	6.3V 47U	1	
C3075	ECJ0EB1E102K	25V 1000P	1	
C3076	ECJ0EB1E102K	25V 1000P	1	
C3077	ECJ0EB1E821K	25V 820P	1	
C3078	ECJ0EB1E102K	25V 1000P	1	
C3079	ERJ2GE0R00X	1/16W 0	1	
C3080	ERJ2GE0R00X	1/16W 0	1	
C3081	ERJ2GE0R00X	1/16W 0	1	
C3082	ECJ0EB1E102K	25V 1000P	1	
C3090	ERJ2GE0R00X	1/16W 0	1	
C3091	ECJ0EB1E102K	25V 1000P	1	
C3092	ECJ0EB1E102K	25V 1000P	1	
C3093	ECJ0EB1E102K	25V 1000P	1	
C3094	ECJ0EB1E102K	25V 1000P	1	
C3095	ERJ2GE0R00X	1/16W 0	1	
C3201	ECJ0EB1C103K	16V 0.01U	1	
C3202	ECJ1VB0J105K	6.3V 1U	1	
C3203	F3F0J4760004		1	
C3205	ECJ0EF1C104Z	16V 0.1U	1	
C3206	ECJ0EF1C104Z	16V 0.1U	1	
C3207	F3F0J226A057	6.3V 22U	1	
C3212	F2G0G331A012	4V 330U	1	
C3213	F3F0J226A057	6.3V 22U	1	
C3214	ERJ8GEY0R00V	1/8W 0	1	
C3216	ECJ1VB0J105K	6.3V 1U	1	
C3223	ECJ0EC1H101J	50V 100P	1	
C3225	ECJ0EC1H101J	50V 100P	1	
C3226	ECJ1VB0J105K	6.3V 1U	1	
C3227	ECJ1VB0J105K	6.3V 1U	1	
C3228	ECJ0EC1H470J	50V 47P	1	
C3229	ECJ0EC1H470J	50V 47P	1	
C3230	ECJ0EC1H470J	50V 47P	1	
C3231	ECJ0EC1H470J	50V 47P	1	
C3232	ECJ0EC1H470J	50V 47P	1	
C3233	ECJ0EC1H470J	50V 47P	1	
C3234	ECJ0EC1H470J	50V 47P	1	
C3235	ECJ0EC1H470J	50V 47P	1	
C3236	ECJ0EC1H470J	50V 47P	1	
C3237	ECJ0EC1H470J	50V 47P	1	
C3238	ECJ0EC1H470J	50V 47P	1	
C3239	ECJ0EC1H470J	50V 47P	1	
C3240	ECJ0EC1H470J	50V 47P	1	
C3241	ECJ0EC1H470J	50V 47P	1	
C3242	ECJ0EC1H470J	50V 47P	1	
C3243	ECJ0EC1H470J	50V 47P	1	
C4001	FLJ0J1060010	6.3V 10U	1	
C4002	FLJ0J1060010	6.3V 10U	1	
C4003	ECJ0EC1H390J	50V 39P	1	
C4004	ECJ0EC1H390J	50V 39P	1	
C4005	FLJ0J1060010	6.3V 10U	1	
C4006	FLJ0J1060010	6.3V 10U	1	
C4007	ECJ0EB1E102K	25V 1000P	1	
C4008	ECJ0EB1E102K	25V 1000P	1	
C4013	ECJ1VB0J105K	6.3V 1U	1	
C4014	ECJ1VB0J105K	6.3V 1U	1	
C4017	ECJ0EB1A104K	10V 0.1U	1	
C4018	ECJ0EB1A104K	10V 0.1U	1	
C4019	F3F1A106A047	10V 10U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C4020	F3F1A106A047	10V 10U	1	
C4022	ECJ0EF1C104Z	16V 0.1U	1	
C4023	F3F1A226A047	10V 22U	1	
C4024	FLJ0J1060010	6.3V 10U	1	
C4026	F3F0J476A047	6.3V 47U	1	
C4027	F3F0J476A047	6.3V 47U	1	
C4028	ECJ3YB1E105K	25V 1U	1	
C4029	ECJ0EF1C104Z	16V 0.1U	1	
C4030	F3F1A226A047	10V 22U	1	
C4031	ECJ0EF1C104Z	16V 0.1U	1	
C4032	F3F0J4760004	6.3V 47U	1	
C4033	ECJ0EF1C104Z	16V 0.1U	1	
C4034	FLK1C106A062	16V 10U	1	
C4036	FLJ0J1060010	6.3V 10U	1	
C4038	ECJ1VB0J105K	6.3V 1U	1	
C4039	ECJ1VB0J105K	6.3V 1U	1	
C4040	F3F0J476A047	6.3V 47U	1	
C4042	ECJ0EF1C104Z	16V 0.1U	1	
C4044	F3F1A106A047	10V 10U	1	
C4046	ECJ1VB0J105K	6.3V 1U	1	
C4047	ECJ0EF1C104Z	16V 0.1U	1	
C4048	ECJ0EF1C104Z	16V 0.1U	1	
C4060	ERJ2GE0R00X	1/16W 0	1	
C4061	ERJ2GE0R00X	1/16W 0	1	
C4062	ERJ2GE0R00X	1/16W 0	1	
C4063	ERJ2GE0R00X	1/16W 0	1	
C4064	ECJ0EB1E102K	25V 1000P	1	
C4065	ECJ0EB1E102K	25V 1000P	1	
C4066	ECJ0EB1E102K	25V 1000P	1	
C4067	ECJ0EB1E102K	25V 1000P	1	
C4725	ECJ0EB1C103K	16V 0.01U	1	
C4726	ECJ0EB1C103K	16V 0.01U	1	
C4727	ECJ0EB1C103K	16V 0.01U	1	
C4728	ECJ0EB1C103K	16V 0.01U	1	
C4732	ECJ0EB1A104K	0.1U	1	
C4737	F2G0G331A012	4V 330U	1	
C4738	F2G0G331A012	4V 330U	1	
C4743	ECJ0EC1H101J	50V 100P	1	
C4744	ECJ0EC1H101J	50V 100P	1	
C5201	ECJ0EB1E102K	25V 1000P	1	
C5202	ECJ0EF1C104Z	16V 0.1U	1	
C5203	ECJ0EF1C104Z	16V 0.1U	1	
C5204	FLJ0J1060010	6.3V 10U	1	
C5205	FLJ0J1060010	6.3V 10U	1	
C5206	ECJ0EF1C104Z	16V 0.1U	1	
C5209	FLJ0J1060010	6.3V 10U	1	
C5210	FLJ0J1060010	6.3V 10U	1	
C5211	F3F0J476A047	6.3V 47U	1	
C5215	F3F0J476A047	6.3V 47U	1	
C5217	ECJ0EC1H101J	50V 100P	1	
C5218	ECJ0EF1C104Z	16V 0.1U	1	
C5219	ECJ0EB1E102K	25V 1000P	1	
C5220	ECJ0EB1E102K	25V 1000P	1	
C5222	ECJ0EC1H470J	50V 47P	1	
C5224	ECJ0EC1H470J	50V 47P	1	
C5225	ECJ0EC1H470J	50V 47P	1	
C5232	ECJ0EF1C104Z	16V 0.1U	1	
C6001	ECJ0EB1C103K	16V 0.01U	1	
C6002	ECJ0EB1A104K	10V 0.1U	1	
C6003	ECJ0EB1A104K	10V 0.1U	1	
C6004	ECJ1VB0J105K	6.3V 1U	1	
C6005	ECJ0EB1A104K	10V 0.1U	1	
C6006	ECJ0EB1A104K	10V 0.1U	1	
C6007	ECJ0EF1C104Z	16V 0.1U	1	
C6008	ECJ0EF1C104Z	16V 0.1U	1	
C6009	ECJ0EB1A104K	10V 0.1U	1	
C6010	ECJ0EF1C104Z	16V 0.1U	1	
C6011	ECJ1VB0J105K	6.3V 1U	1	
C6012	ECJ0EF1C104Z	16V 0.1U	1	
C6801	F3F0J476A047	6.3V 47U	1	
C6802	ECJ0EF1C104Z	16V 0.1U	1	
C8001	ECJ0EB1A104K	10V 0.1U	1	
C8006	ECJ0EB1E102K	25V 1000P	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C8010	ECJ1VB0J105K	6.3V 1U	1	
C8011	ECJ1VB0J105K	6.3V 1U	1	
C8012	F3F1A226A047	10V 22U	1	
C8013	ECJ1VB0J105K	6.3V 1U	1	
C8016	ECJ1VB0J105K	6.3V 1U	1	
C8017	ECJ0EF1C104Z	16V 0.1U	1	
C8020	F1J1A225A003	10V 2.2U	1	
C8021	F1J1A225A003	10V 2.2U	1	
C8022	F1J1A225A003	10V 2.2U	1	
C8023	ECJ0EB1C103K	16V 0.01U	1	
C8024	ECJ0EB1C822K	16V 8200P	1	
C8025	F3F1A226A047	10V 22U	1	
C8026	ECJ0EB1E331K	25V 330P	1	
C8027	ECJ0EB1E331K	25V 330P	1	
C8028	ECJ0EB1E331K	25V 330P	1	
C8029	F3F1A106A047	10V 10U	1	
C8030	F1J1A335A005	10V 3.3U	1	
C8031	ECJ0EB1E561K	25V 560P	1	
C8032	F1J0J4750002	6.3V 4.7U	1	
C8041	ECJ0EC1H820J	50V 82P	1	
C8042	ECJ0EC1H680J	50V 68P	1	
C8045	ECJ1VB0J105K	6.3V 1U	1	
C8050	ECJ0EB1A104K	10V 0.1U	1	
C8201	ECJ1VB0J105K	6.3V 1U	1	
C8204	ECJ0EC1H470J	50V 47P	1	
C8205	ECJ0EC1H470J	50V 47P	1	
C8207	ECJ0EC1H470J	50V 47P	1	
C8208	ECJ0EC1H470J	50V 47P	1	
C8212	ECJ0EB1E102K	25V 1000P	1	
C8213	ECJ0EB1C103K	16V 0.01U	1	
C8214	ECJ0EB1E102K	25V 1000P	1	
C8215	ECJ0EB1E102K	25V 1000P	1	
C8216	ECJ0EB1E102K	25V 1000P	1	
C8217	ECJ3YB1E105K	25V 1U	1	
C8218	F3F1A106A047	10V 10U	1	
C8219	ECJ0EB1E102K	25V 1000P	1	
C8220	F3F1A106A047	10V 10U	1	
C8221	ECJ0EF1C104Z	16V 0.1U	1	
C8223	ECJ0EB1C223K	16V 0.022U	1	
C8224	ECJ0EF1C104Z	16V 0.1U	1	
C8225	ECJ0EF1C104Z	16V 0.1U	1	
C8237	ECJ0EB1E102K	25V 1000P	1	
C8250	ECJ0EB1E821K	25V 820P	1	
C8251	ECJ0EC1H221J	50V 220P	1	
C8252	ECJ0EC1H221J	50V 220P	1	
C8255	ECJ0EB1E102K	25V 1000P	1	
C8256	ECJ0EF1C104Z	16V 0.1U	1	
C8401	ECJ0EF1C104Z	16V 0.1U	1	
C8402	ECJ1VB0J105K	6.3V 1U	1	
C8403	ECJ0EB1C103K	16V 0.01U	1	
C8404	F3F1C106A042	16V 10U	1	
C8407	F1J0J4750002	6.3V 4.7U	1	
C8409	ECJ0EB1E102K	25V 1000P	1	
C8410	ECJ0EB1E102K	25V 1000P	1	
C8602	ECJ0EB1E122K	25V 1200P	1	
C8801	ECJ0EF1C104Z	16V 0.1U	1	
C8802	ECJ1VB0J105K	6.3V 1U	1	
C8803	F3F1A226A047	10V 22U	1	
C8804	ECJ0EB1E102K	25V 1000P	1	
C8805	ECJ1VB0J105K	6.3V 1U	1	
C8806	F3F0J476A047	6.3V 47U	1	
C8807	ECJ0EB1C103K	16V 0.01U	1	
C8808	F3F1A226A047	10V 22U	1	
C8809	ECJ2YB1C105K	16V 1U	1	
C8810	ECJ2YB1C105K	16V 1U	1	
C8811	ECJ2YB1C105K	16V 1U	1	
C8812	ECJ0EF1C104Z	16V 0.1U	1	
C8813	F3F1A226A047	10V 22U	1	
C8841	ERJ2GE0R00X	1/16W 0	1	
C8843	ECJ1VB0J105K	6.3V 1U	1	
C8845	ECJ1VB0J105K	6.3V 1U	1	
C8846	ECJ0EB1A104K	10V 0.1U	1	
C8847	ECJ0EB1A104K	10V 0.1U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C8848	ECJ0EB1A104K	10V 0.1U	1	
C8860	ECJ0EB1E102K	25V 1000P	1	
C8861	ECJ0EB1E102K	25V 1000P	1	
C8862	ERJ2GE0R00X	1/16W 0	1	
C8863	ERJ2GE0R00X	1/16W 0	1	
D1011	B0JCPD000032	DIODE	1	
D1013	B0JCPD000032	DIODE	1	
D1016	MAZ81000ML	DIODE	1	
D1017	MAZ80390LL	DIODE	1	
D1021	B0JCPD000032	DIODE	1	
D1101	B0JCMD000022	DIODE	1	
D1102	MA2J11100L	DIODE	1	
D1103	MA2J11100L	DIODE	1	
D1401	B0JCPE000004	DIODE	1	
D1402	B0JCPD000032	DIODE	1	
D1404	B0JCPD000032	DIODE	1	
D1405	B0JCPD000032	DIODE	1	
D1406	B0JCMD000022	DIODE	1	
D1411	MA2J11100L	DIODE	1	
D1412	MAZ80510ML	DIODE	1	
D1413	MA3J142E0L	DIODE	1	
D1414	MA3J142E0L	DIODE	1	
D1415	MAZ80510ML	DIODE	1	
D1416	MA2J11100L	DIODE	1	
D1417	MA2J11100L	DIODE	1	
D1601	B0JCPD000032	DIODE	1	
D1621	B0JCPE000004	DIODE	1	
D1901	MA3S13300L	DIODE	1	
D1902	MA3S13300L	DIODE	1	
D1903	MA3S132D0L	DIODE	1	
D3001	MA2J11100L	DIODE	1	
D4001	MA3S132D0L	DIODE	1	
D4002	MA2SD2400L	DIODE	1	
D4003	MA3S132E0L	DIODE	1	
D4004	MA3S132D0L	DIODE	1	
D4007	MA3S132D0L	DIODE	1	
D4008	MA2J11100L	DIODE	1	
D4010	MA2J11100L	DIODE	1	
D5221	MA2J11100L	DIODE	1	
D6002	LNJ414K82RA1	DIODE	1	
D6003	LNJ826W83RA	DIODE	1	
D6004	MA2J11100L	DIODE	1	
D8201	MA2SD2400L	DIODE	1	
D8202	MA2SD2400L	DIODE	1	
D8401	MA2J11100L	DIODE	1	
FL8201	J0HAAB000037	FILTER	1	
FL8202	J0HAAB000037	FILTER	1	
FL8203	J0HAAB000037	FILTER	1	
FP1901	K1MN40BA0059	CONNECTOR(40P)	1	
FP1903	K1MN30BA0059	CONNECTOR(30P)	1	
FP2501	K1MY18BA0113	CONNECTOR(18P)	1	
FP5201	K1MN30BA0079	CONNECTOR(30P)	1	
FP6202	K1MY06BA0041	CONNECTOR(6P)	1	
FP6801	K1MN06AA0003	CONNECTOR(6P)	1	
FP8005	K1MN40BA0059	CONNECTOR(40P)	1	
IC1001	C1ZBZ0002345	IC	1	
IC1003	C0DBZHD00013	IC	1	
IC1004	C0CBZDC00050	IC	1	
IC1101	C0CBZDC00050	IC	1	
IC1401	C0DBCMD00005	IC	1	
IC1411	C0DBAGZ00029	IC	1	
IC1412	C0EBL0000178	IC	1	
IC1601	C0BBDZZ00008	IC	1	
IC1901	C0DBZKA00003	IC	1	
IC2601	C0GBG0000048	IC	1	
IC2651	C0GBF0000004	IC	1	
IC3001	RFKWPSA0W160	IC	1	(PAVC-CSG)
IC3002	RFKWPDLS91B	IC	1	(EE)
IC3002	RFKWPDLS91C	IC	1	(GN)

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
IC3002	RFKWDBA005AA	IC	1	(GCS)
IC3004	MN2DS0009VP	IC	1	
IC3007	C0EBE0000384	IC	1	
IC3009	C3ABPG000133	IC	1	
IC3201	C9ZB00000461	IC	1	
IC4001	C0CBDC000050	IC	1	
IC4003	C0FBBK000049	IC	1	
IC4005	C0ABBB000105	IC	1	
IC4008	C0ZBZ0001010	IC	1	
IC5201	C0JBAS000265	IC	1	
IC6001	C0EBB0000036	IC	1	
IC6002	MN101C62DAA	IC	1	
IC6003	C0JBAA000344	IC	1	
IC6007	C0EBE0000124	IC	1	
IC8001	AN12577A-VT	IC	1	
IC8202	C0JBAZ002192	IC	1	
IC8401	C3EBDC000063	IC	1	
IC8403	C0ABBB000271	IC	1	
IC8602	C0JBAA000140	IC	1	
IC8801	C0CBDC000050	IC	1	
IC8802	C0CBABC00147	IC	1	
IP1401	K5H3121A0004	IC PROTECTOR	1	
IP1402	K5H3121A0004	IC PROTECTOR	1	
IP1421	K5H3121A0004	IC PROTECTOR	1	
IP1901	K5H2021A0003	IC PROTECTOR	1	
IR6801	B3RAD0000075	IC	1	
JK1401	K2ED2B000002	JACK,DC IN	1	
JK1421	K4ZZ04000033	BATTERY TERMINAL	1	
JK3201	K2HC104B0027	JACK	1	
JK4001	K2HC108B0002	JACK	1	
JK4702	K2HC104B0039	JACK	1	
JK4703	K2HC104B0039	JACK	1	
K1001	ERJ2GE0R00X	1/16W 0	1	
K1003	ERJ2GE0R00X	1/16W 0	1	
K1005	ERJ2GE0R00X	1/16W 0	1	
K1007	ERJ2GE0R00X	1/16W 0	1	
K1008	ERJ2GE0R00X	1/16W 0	1	
K1009	ERJ2GE0R00X	1/16W 0	1	
K1010	ERJ2GE0R00X	1/16W 0	1	
K1011	ERJ2GE0R00X	1/16W 0	1	
K1012	ERJ2GE0R00X	1/16W 0	1	
K1013	ERJ2GE0R00X	1/16W 0	1	
K1014	ERJ2GE0R00X	1/16W 0	1	
K1016	ERJ2GE0R00X	1/16W 0	1	
K1017	ERJ2GE0R00X	1/16W 0	1	
K1018	ERJ2GE0R00X	1/16W 0	1	
K1019	ERJ2GE0R00X	1/16W 0	1	
K1108	ERJ2GE0R00X	1/16W 0	1	
K1201	ERJ2GE0R00X	1/16W 0	1	
K1202	ERJ2GE0R00X	1/16W 0	1	
K3001	ERJ2GE0R00X	1/16W 0	1	
K3002	ERJ2GE0R00X	1/16W 0	1	
K3003	ERJ2GE0R00X	1/16W 0	1	
K3004	ERJ2GE0R00X	1/16W 0	1	
K5206	ERJ2GE0R00X	1/16W 0	1	
K5207	ERJ2GE0R00X	1/16W 0	1	
L1002	G1C150MA0182	COIL	1	
L1006	G1C150MA0218	COIL	1	
L1007	G1C150MA0182	COIL	1	
L1009	G1C150MA0182	COIL	1	
L1010	G1C150Z00004	COIL 15UH	1	
L1101	G1C100KA0055	CHIP INDUCTOR 10UH	1	
L1102	G1C100KA0055	CHIP INDUCTOR 10UH	1	
L1103	G1C100KA0055	CHIP INDUCTOR 10UH	1	
L1401	G0B200H00005	COIL	1	
L1402	G1C220M00043	COIL 22UH	1	
L1403	G1C101KA0023	COIL	1	
L1404	G1C220KA0055	CHIP INDUCTOR 22UH	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
L1901	G1C150Z00004	COIL 15UH	1	
L3001	G1C100KA0055	CHIP INDUCTOR 10UH	1	
L3002	G1C100KA0055	CHIP INDUCTOR 10UH	1	
L3003	J0JCC0000101	COIL	1	
L3004	J0JCC0000101	COIL	1	
L3201	G1C220KA0055	CHIP INDUCTOR 22UH	1	
L3203	G1C220KA0055	CHIP INDUCTOR 22UH	1	
L3204	G1C220KA0055	CHIP INDUCTOR 22UH	1	
L3205	G1C220KA0055	CHIP INDUCTOR 22UH	1	
L3206	G1C220KA0055	CHIP INDUCTOR 22UH	1	
L3207	G1C220KA0055	CHIP INDUCTOR 22UH	1	
L3208	G1C220KA0055	CHIP INDUCTOR 22UH	1	
L3209	G1C220KA0055	CHIP INDUCTOR 22UH	1	
L3210	G1C220KA0055	CHIP INDUCTOR 22UH	1	
L4001	G1C220KA0055	CHIP INDUCTOR 22UH	1	
L4701	J0JBC0000028	COIL	1	
L4702	J0JBC0000028	COIL	1	
L5201	G1C100KA0055	CHIP INDUCTOR 10UH	1	
L8030	G1C120JA0041	COIL 12UH	1	
L8801	G1C100K00020	CHIP INDUCTOR 10UH	1	
L8805	ERJ3GEY0R00V	M.RESISTOR CH 1/10W 0	1	
L8806	G1C150M00009	COIL	1	
LB2651	J0JHC0000045	COIL	1	
LB3028	J0JHC0000045	COIL	1	
LB3029	J0JHC0000045	COIL	1	
LB3031	J0JBC0000028	COIL	1	
LB3032	J0JCC0000101	COIL	1	
LB3033	J0JHC0000045	COIL	1	
LB3201	J0JCC0000307	COIL	1	
LB4001	J0JCC0000101	COIL	1	
LB4002	J0JCC0000101	COIL	1	
LB4003	J0JBC0000028	COIL	1	
LB4004	J0JBC0000028	COIL	1	
LB4005	J0JCC0000101	COIL	1	
LB4701	J0JBC0000028	COIL	1	
LB4702	J0JBC0000028	COIL	1	
LB4703	J0JBC0000028	COIL	1	
LB4704	J0JBC0000028	COIL	1	
LB4706	J0JBC0000028	COIL	1	
LB4707	J0JBC0000028	COIL	1	
LB4708	J0JBC0000028	COIL	1	
LB4709	J0JBC0000028	COIL	1	
LB5206	ERJ3GEY0R00V	1/10W 0	1	
LB5207	J0JCC0000307	COIL	1	
LB5208	J0JCC0000307	COIL	1	
LB5209	J0JCC0000307	COIL	1	
LB5210	J0JCC0000307	COIL	1	
LB5211	J0JCC0000307	COIL	1	
LB5212	J0JCC0000307	COIL	1	
LB5213	J0JCC0000101	COIL	1	
LB5216	J0JCC0000307	COIL	1	
LB5218	ERJ3GEY0R00V	1/10W 0	1	
LB5219	J0JCC0000101	COIL	1	
LB5221	J0JEC0000011	COIL	1	
LB5222	J0JBC0000086	COIL	1	
LB5223	J0JEC0000011	COIL	1	
LB5224	J0JCC0000307	COIL	1	
LB5226	ERJ3GEY0R00V	1/10W 0	1	
LB5227	ERJ3GEY0R00V	1/10W 0	1	
LB5228	ERJ3GEY0R00V	1/10W 0	1	
LB5229	ERJ3GEY0R00V	1/10W 0	1	
LB5230	J0JHC0000045	COIL	1	
LB5231	J0JCC0000307	COIL	1	
LB5232	J0JCC0000307	COIL	1	
LB8201	J0JHC0000045	COIL	1	
LB8205	J0JHC0000045	COIL	1	
LB8603	J0JHC0000045	COIL	1	
LB8808	ERJ3GEYJ100V	1/10W 10	1	
LB8809	J0JHC0000045	COIL	1	
LB8810	J0JHC0000045	COIL	1	
LB8811	J0JHC0000045	COIL	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
P1902	K1KA02BA0072	CONNECTOR(2P)	1	
Q1001	B1DHCD000023	TRANSISTOR	1	
Q1002	B1DHCD000023	TRANSISTOR	1	
Q1003	B1DHCD000023	TRANSISTOR	1	
Q1101	B1BBCF000026	TRANSISTOR	1	
Q1401	B1DHCD000023	TRANSISTOR	1	
Q1402	B1DHFD000008	TRANSISTOR	1	
Q1412	2SB1218ARL	TRANSISTOR	1	
Q1622	B1CFHA000002	TRANSISTOR	1	
Q1623	B1BBCF000031	TRANSISTOR	1	
Q1901	B1DFDF000001	TRANSISTOR	1	
Q4001	2SD1819A0L	TRANSISTOR	1	
Q4002	2SD1819A0L	TRANSISTOR	1	
Q5201	2SD1819A0L	TRANSISTOR	1	
Q5202	2SD1819A0L	TRANSISTOR	1	
Q5211	B1ADPC000004	TRANSISTOR	1	
Q5215	B1ADPC000004	TRANSISTOR	1	
Q8001	2SB1218ARL	TRANSISTOR	1	
Q8002	XP0450100L	TRANSISTOR	1	
Q8201	XP0450100L	TRANSISTOR	1	
Q8401	XN0460100L	TRANSISTOR	1	
Q8406	XN0460100L	TRANSISTOR	1	
QR1007	UNR521300L	TRANSISTOR	1	
QR1008	UNR521300L	TRANSISTOR	1	
QR1402	UNR521300L	TRANSISTOR	1	
QR1411	B1ZBZ0000049	TRANSISTOR	1	
QR1413	B1GDCFJN0011	TRANSISTOR	1	
QR1602	UNR521300L	TRANSISTOR	1	
QR1603	UNR521300L	TRANSISTOR	1	
QR4001	UNR521300L	TRANSISTOR	1	
QR4002	B1GDCFJN0011	TRANSISTOR	1	
QR4004	B1GDCFJN0011	TRANSISTOR	1	
QR4005	B1GDCFJN0011	TRANSISTOR	1	
QR4006	B1GFGCAA0001	TRANSISTOR	1	
QR4009	B1GFGCAA0001	TRANSISTOR	1	
QR4010	B1GDCFJN0011	TRANSISTOR	1	
QR4011	UNR521300L	TRANSISTOR	1	
QR4013	B1GDCFJN0011	TRANSISTOR	1	
QR4014	UNR521300L	TRANSISTOR	1	
QR4015	UNR521300L	TRANSISTOR	1	
QR4016	UNR521300L	TRANSISTOR	1	
QR4017	UNR521300L	TRANSISTOR	1	
QR4018	UNR521300L	TRANSISTOR	1	
QR4702	B1GFGCAA0001	TRANSISTOR	1	
QR4703	B1GFGCAA0001	TRANSISTOR	1	
QR5221	UNR212100L	TRANSISTOR	1	
R1002	ERJ2GE0R00X	1/16W 0	1	
R1005	ERJ2RHD103X	1/16W 10K	1	
R1006	ERJ2RHD563X	1/16W 56K	1	
R1014	ERJ2RHD103X	1/16W 10K	1	
R1015	ERJ2RHD333X	1/16W 33K	1	
R1016	ERJ2GEJ183X	1/16W 18K	1	
R1018	ERJ2GEJ822X	1/16W 8.2K	1	
R1019	ERJ2GEJ472X	1/16W 4.7K	1	
R1020	ERJ2GEJ272X	1/16W 2.7K	1	
R1022	ERJ2RHD123X	1/16W 12K	1	
R1023	ERJ2RHD333X	1/16W 33K	1	
R1027	ERJ2RHD332X	1/16W 3.3K	1	
R1028	ERJ2RHD332X	1/16W 3.3K	1	
R1029	ERJ2RHD333X	1/16W 33K	1	
R1030	ERJ2RHD332X	1/16W 3.3K	1	
R1032	ERJ2RHD183X	1/16W 18K	1	
R1033	ERJ2RHD102X	1/16W 1K	1	
R1034	ERJ2RHD822X	1/16W 8.2K	1	
R1035	ERJ2GEJ331X	1/16W 330	1	
R1037	ERJ2RHD393X	1/16W 39K	1	
R1038	ERJ2RHD102X	1/16W 1K	1	
R1039	ERJ2RHD822X	1/16W 8.2K	1	
R1040	ERJ2RHD821X	1/16W 820	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R1042	ERJ2GEJ563X	1/16W 56K	1	
R1043	ERJ2GEJ393X	1/16W 39K	1	
R1044	ERJ3GEYJ102V	1/10W 1K	1	
R1045	ERJ3GEYJ102V	1/10W 1K	1	
R1060	ERJ2GEJ151X	1/16W 150	1	
R1061	ERJ2GEJ822X	1/16W 8.2K	1	
R1063	ERJ2RHD123X	1/16W 12K	1	
R1064	ERJ2RHD333X	1/16W 33K	1	
R1102	ERJ2RHD683X	1/16W 68K	1	
R1103	ERJ2RHD102X	1/16W 1K	1	
R1104	ERJ2RHD103X	1/16W 10K	1	
R1105	ERJ2GEJ561X	1/16W 560	1	
R1106	ERJ3GEYJ220V	1/10W 22	1	
R1107	ERJ3GEYJ100V	1/10W 10	1	
R1110	ERJ2GE0R00X	1/16W 0	1	
R1203	ERJ2GE0R00X	1/16W 0	1	
R1205	ERJ2GE0R00X	1/16W 0	1	
R1401	ERJ2GEJ223X	1/16W 22K	1	
R1406	ERJ2RHD223X	1/16W 22K	1	
R1407	ERJ2RHD332X	1/16W 3.3K	1	
R1410	ERJ2GEJ103X	1/16W 10K	1	
R1411	ERJ2GEJ103X	1/16W 10K	1	
R1412	ERJ2GEJ104X	1/16W 100K	1	
R1413	ERJ2GEJ223X	1/16W 22K	1	
R1414	ERJ2GEJ103X	1/16W 10K	1	
R1415	ERJ2GEJ103X	1/16W 10K	1	
R1416	ERJ2GEJ473X	1/16W 47K	1	
R1418	ERJ2GEJ105X	1/16W 1M	1	
R1419	ERJ2GEJ103X	1/16W 10K	1	
R1621	D1BFR220A007	1/16W 22	1	
R1622	ERJ2RHD103X	1/16W 10K	1	
R1623	ERJ2RHD104X	1/16W 0.1M	1	
R1624	ERJ2RHD104X	1/16W 0.1M	1	
R1625	ERJ2RHD104X	1/16W 0.1M	1	
R1626	ERJ2RHD103X	1/16W 10K	1	
R1627	ERJ2RHD104X	1/16W 0.1M	1	
R1628	ERJ2RHD473X	1/16W 47K	1	
R1629	ERJ2RHD104X	1/16W 0.1M	1	
R1630	ERJ2RHD123X	1/16W 12K	1	
R1631	ERJ2RHD563X	1/16W 56K	1	
R1633	ERJ2GEJ102X	1/16W 1K	1	
R1635	ERJ2GEJ473X	1/16W 47K	1	
R1638	ERJ2GEJ102X	1/16W 1K	1	
R1643	ERJ2GEJ103X	1/16W 10K	1	
R1901	ERJ3RBD563V	1/16W 56K	1	
R1902	ERJ3RBD623V	1/16W 62K	1	
R1903	D0FB104JA005	100K	1	
R1904	D0FB104JA005	100K	1	
R1905	D0FB102JA005	1K	1	
R1907	ERJ3GEYJ334V	1/10W 330K	1	
R1908	ERJ3GEYJ224V	1/10W 220K	1	
R1909	ERJ3GEYJ123V	1/10W 12K	1	
R1910	ERJ3RBD471V	1/16W 470	1	
R1911	ERJ3GEYJ393V	1/10W 39K	1	
R1912	D0FB221JA005	220	1	
R1913	D0YBR0000024	0	1	
R1914	D0YBR0000024	0	1	
R1915	ERJ3GEYJ220V	1/10W 22	1	
R1916	ERJ3GEYJ392V	1/10W 3.9K	1	
R1917	ERJ3GEYJ563V	1/10W 56K	1	
R1919	ERJ3RED274V	1/10W 270K	1	
R2501	ERJ2GEJ471X	1/16W 470	1	
R2523	ERJ2GEJ473X	1/16W 47K	1	
R2651	ERJ2GEJ471X	1/16W 470	1	
R2652	ERJ12RQJR68U	1/2W 68	1	
R2653	ERJ2GEJ153X	1/16W 15K	1	
R3004	ERJ2GEJ101X	1/16W 100	1	
R3005	ERJ2GEJ473X	1/16W 47K	1	
R3007	ERJ2GEJ104X	1/16W 100K	1	
R3008	ERJ2GEJ104X	1/16W 100K	1	
R3009	ERJ2GEJ333X	1/16W 33K	1	
R3010	ERJ2GEJ680X	1/16W 68	1	
R3011	ERJ2GEJ182X	1/16W 1.8K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R3013	ERJ2GEJ330X	1/16W 33	1	
R3014	ERJ3RBD333V	1/16W 33K	1	
R3015	ERJ2GEJ331X	1/16W 330	1	
R3016	ERJ2GEJ471X	1/16W 470	1	
R3017	ERJ2GEJ471X	1/16W 470	1	
R3018	ERJ2GEJ471X	1/16W 470	1	
R3019	ERJ3RBD102V	1/16W 1K	1	
R3020	ERJ2GEJ221X	1/16W 220	1	
R3021	ERJ2GEJ105X	1/16W 1M	1	
R3022	ERJ3RBD222V	1/16W 2.2K	1	
R3023	ERJ3RBD331V	1/16W 330	1	
R3024	ERJ3RBD181V	1/16W 180	1	
R3025	ERJ2GEJ270X	1/16W 27	1	
R3026	ERJ3RBD181V	1/16W 180	1	
R3027	ERJ2GEJ270X	1/16W 27	1	
R3028	ERJ2GEJ103X	1/16W 10K	1	
R3029	ERJ2GEJ103X	1/16W 10K	1	
R3030	ERJ3RBD181V	1/16W 180	1	
R3031	ERJ2GEJ270X	1/16W 27	1	
R3032	ERJ3RBD181V	1/16W 180	1	
R3033	ERJ2GEJ270X	1/16W 27	1	
R3034	ERJ3RBD181V	1/16W 180	1	
R3035	ERJ2GEJ270X	1/16W 27	1	
R3044	ERJ2GEJ472X	1/16W 4.7K	1	
R3201	ERJ2GE0R00X	1/16W 0	1	
R3202	ERJ2GE0R00X	1/16W 0	1	
R3203	ERJ2GE0R00X	1/16W 0	1	
R3205	ERJ2GE0R00X	1/16W 0	1	
R3206	ERJ2GE0R00X	1/16W 0	1	
R3217	ERJ3RED750V	1/16W 75	1	
R3226	ERJ2GEJ102X	1/16W 1K	1	
R3228	ERJ2GE0R00X	1/16W 0	1	
R3230	ERJ2GEJ681X	1/16W 680	1	
R3231	ERJ2GEJ681X	1/16W 680	1	
R3232	ERJ2GE0R00X	1/16W 0	1	
R4001	ERJ2GEJ273X	1/16W 27K	1	
R4002	ERJ2GEJ273X	1/16W 27K	1	
R4003	ERJ2GEJ333X	1/16W 33K	1	
R4004	ERJ2GEJ333X	1/16W 33K	1	
R4009	ERJ2GEJ101X	1/16W 100	1	
R4010	ERJ2GEJ101X	1/16W 100	1	
R4015	ERJ2GEJ821X	1/16W 820	1	
R4016	ERJ2GEJ821X	1/16W 820	1	
R4017	ERJ2GE0R00X	1/16W 0	1	
R4018	ERJ2GE0R00X	1/16W 0	1	
R4019	ERJ2GEJ153X	1/16W 15K	1	
R4020	ERJ2GEJ153X	1/16W 15K	1	
R4023	ERJ2GEJ103X	1/16W 10K	1	
R4024	ERJ2GEJ103X	1/16W 10K	1	
R4025	ERJ2GEJ103X	1/16W 10K	1	
R4026	ERJ2GEJ103X	1/16W 10K	1	
R4031	ERJ2GEJ563X	1/16W 56K	1	
R4032	ERJ2GEJ563X	1/16W 56K	1	
R4033	ERJ2GEJ100X	1/16W 10	1	
R4034	ERJ2GEJ100X	1/16W 10	1	
R4035	ERJ2GEJ103X	1/16W 10K	1	
R4036	ERJ2GEJ103X	1/16W 10K	1	
R4038	ERJ2GEJ104X	1/16W 100K	1	
R4039	ERJ2GEJ103X	1/16W 10K	1	
R4040	ERJ2GE0R00X	1/16W 0	1	
R4041	ERJ2GEJ102X	1/16W 1K	1	
R4048	ERJ2GEJ222X	1/16W 2.2K	1	
R4049	ERJ2GEJ222X	1/16W 2.2K	1	
R4050	ERJ2GEJ473X	1/16W 47K	1	
R4051	ERJ2GEJ473X	1/16W 47K	1	
R4052	ERJ2GEJ222X	1/16W 2.2K	1	
R4053	ERJ2GEJ102X	1/16W 1K	1	
R4054	ERJ2GEJ104X	1/16W 100K	1	
R4055	ERJ2GEJ472X	1/16W 4.7K	1	
R4057	ERJ2GEJ152X	1/16W 1.5K	1	
R4059	ERJ2GEJ562X	1/16W 5.6K	1	
R4060	ERJ2GEJ562X	1/16W 5.6K	1	
R4063	ERJ2GE0R00X	1/16W 0	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R4064	ERJ2GE0R00X	1/16W 0	1	
R4067	ERJ2GEJ334X	1/16W 330K	1	
R4068	ERJ2GEJ334X	1/16W 330K	1	
R4069	ERJ2GEJ222X	1/16W 2.2K	1	
R4070	ERJ2GEJ222X	1/16W 2.2K	1	
R4071	ERJ2GEJ472X	1/16W 4.7K	1	
R4072	ERJ2GEJ104X	1/16W 100K	1	
R4073	ERJ2GEJ104X	1/16W 100K	1	
R4074	ERJ2GE0R00X	1/16W 0	1	
R4075	ERJ2GEJ473X	1/16W 47K	1	
R4077	ERJ2GE0R00X	1/16W 0	1	
R4713	ERJ2GE0R00X	1/16W 0	1	
R4714	ERJ2GE0R00X	1/16W 0	1	
R4725	D0GF270JA002	1/8W 27K	1	
R4726	D0GF270JA002	1/8W 27K	1	
R4727	ERJ2GEJ102X	1/16W 1K	1	
R4728	ERJ2GEJ102X	1/16W 1K	1	
R4729	ERJ2GEJ472X	1/16W 4.7K	1	
R4730	ERJ2GEJ472X	1/16W 4.7K	1	
R4731	D0GF270JA002	1/8W 27K	1	
R4732	D0GF270JA002	1/8W 27K	1	
R4733	ERJ2GEJ102X	1/16W 1K	1	
R4734	ERJ2GEJ102X	1/16W 1K	1	
R4735	ERJ2GEJ472X	1/16W 4.7K	1	
R4736	ERJ2GEJ472X	1/16W 4.7K	1	
R5201	ERJ2GEJ223X	1/16W 22K	1	
R5203	ERJ2GEJ333X	1/16W 33K	1	
R5204	ERJ2GEJ102X	1/16W 1K	1	
R5205	ERJ2GEJ102X	1/16W 1K	1	
R5208	ERJ2GEJ331X	1/16W 330	1	
R5209	ERJ2GEJ331X	1/16W 330	1	
R5210	ERJ2GEJ100X	1/16W 10	1	
R5211	ERJ2GEJ2R2X	1/16W 2.2	1	
R5212	ERJ12YJ270U	1/2W 27	1	
R5213	ERJ2GEJ473X	1/16W 47K	1	
R5214	ERJ2GEJ153X	1/16W 15K	1	
R5215	ERJ2GEJ2R2X	1/16W 2.2	1	
R5216	ERJ12YJ270U	1/2W 27	1	
R5217	ERJ2GEJ473X	1/16W 47K	1	
R5218	ERJ2GEJ100X	1/16W 10	1	
R5219	ERJ3RED910V	1/16W 91	1	
R5220	ERJ3RED910V	1/16W 91	1	
R5221	ERJ2GEJ102X	1/16W 1K	1	
R6003	ERJ2GE0R00X	1/16W 0	1	
R6004	ERJ2GEJ273X	1/16W 27K	1	
R6005	ERJ3RBD103V	1/16W 10K	1	
R6006	ERJ2GEJ332X	1/16W 3.3K	1	
R6007	ERJ3RBD683V	1/16W 68K	1	
R6008	ERJ2GEJ222X	1/16W 2.2K	1	
R6010	ERJ3RBD333V	1/16W 33K	1	
R6011	ERJ2GE0R00X	1/16W 0	1	
R6012	ERJ2GEJ152X	1/16W 1.5K	1	
R6013	ERJ3RBD103V	1/16W 10K	1	
R6014	ERJ2GEJ122X	1/16W 1.2K	1	
R6019	ERJ2GE0R00X	1/16W 0	1	
R6025	ERJ2GEJ331X	1/16W 330	1	
R6026	ERJ2GEJ103X	1/16W 10K	1	
R6027	ERJ2GEJ273X	1/16W 27K	1	
R6028	ERJ2GEJ473X	1/16W 47K	1	
R6029	ERJ2GEJ473X	1/16W 47K	1	
R6030	ERJ3GEY0R00V	1/10W 0	1	
R6033	ERJ3GEY0R00V	1/10W 0	1	
R6034	ERJ3GEY0R00V	1/10W 0	1	
R6035	ERJ3GEY0R00V	1/10W 0	1	
R6040	ERJ2GEJ103X	1/16W 10K	1	
R6041	ERJ3RBD103V	1/16W 10K	1	
R6042	ERJ3RBD122V	1/16W 1.2K	1	
R6043	ERJ2RHD104X	1/16W 0.1M	1	
R6044	ERJ2GEJ103X	1/16W 10K	1	
R6047	ERJ2GEJ151X	1/16W 150	1	
R6049	ERJ2GEJ473X	1/16W 47K	1	
R6801	ERJ2GEJ222X	1/16W 2.2K	1	
R6802	ERJ2GEJ332X	1/16W 3.3K	1	

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